ERAA 2026 Data Collection Documentation

Documentation for the ERAA 2026 Data Collection

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Welcome to the ERAA 2026 Data Collection Documentation

PEMMDB-logo.png

ERAA 2026 Data Collection

The documentation contained in this repository is related to the data collection for the ERAA 2026 study. It is laid out in the following sections:

- Data Collection Files (Data Collection Files): Details related to the defintions of each of the files, sheets and fields collected in the PEMMDB App.
- Scenario Guidelines (Scenario Guidelines): Guidelines related to the scenarios to be used for the ERAA 2026 data collection.
- General Guidelines: General guidelines related to specific topics within the data collection such as technical details about PEMMDB Templates (PEMMDB App Template Technical Details) and a Glossary of Terms and Acronyms (Glossary of Terms) used in the documentation.

About the PEMMDB App

The PEMMDB app is the application used to collect and validate TSOs data used in System Development Studies (legally mandated). It was launched end of 2023 for the ERAA 2024 data collection, and used since then for all market data collections. In 2025, it will start being used to collect long-term grid models as well with the objective in the long run to perfectly align LT market data and LT grid models.

Data is still collected as Excel files whose sheets contain the raw data that is used to populate the fields in the Web Ontology Language (OWL) model.

This documentation is designed to provide guidelines for the ERAA 2026 data collection, proper documentation for all the fields that are collected, and tutorials on how to use the application. It is intended to be a resource for data correspondents.

Further information about the functionality of the PEMMDB App and how to interact with the user interface can be found in the *Help* menu within the PEMMDB App itself.

We hope you find this documentation helpful and informative. If you have any questions or need further assistance, please don't hesitate to contact us (mailto:datacollectionpemmdb@entsoe.eu).

Scenario Guidelines

ERAA 2026 will use two main scenarios.

This guideline is designed to aid TSOs in submission of datasets for ERAA 2026. In accordance with current ACER's ERAA methodology article 3.3(a), data shall be based on NECPs link (https://www.acer.europa.eu/sites/default/files/documents/Individual%20Decisions_annex/ACER%20Decision%2024-2020%20on%20ERAA%20-%20Annex%20I_1.pdf). We would refer to this scenario as to National Plans scenario as it is defined in ERAA methodology revision draft. Meanwhile, the methodology revision is including Trends and Projections scenario. In anticipation for this scenario and to prepare for revised methodology adoption in ERAA 2027 we are collecting data for such scenario. Proof-of-Concept test are planned within ERAA 2026.

Data for National Plan scenario: the baseline data shall be consistent with existing national policies to meet the objectives, targets and contributions contained in the NECPs, as referred to in Article 3 of Governance Regulation. This includes policies related to coal phase-out, nuclear phase-out, RES development, storage, electric vehicles, sectoral integration, DSR and energy efficiency measures. Best estimates regarding the state of the grid should be considered taking into account the most recent TYNDP and the most recent national development plans. Scenario assumptions shall coordinate with the latest NECP-based scenario, which (i) can be adjusted to match development trajectories for the short-term based on most recent data and trends and (ii) provides a coherent evolution within the period analysed when considering NECP yearly targets and evolutions. This scenario for all target years is built on the bottom-up data collected from TSOs, which shall be aligned with National energy policy targets (NECP-, MS-, EU-driven) in the best feasible way.

- Target Year 2028, 2030 - TSOs' best estimate, **refining** NECP and other data compliant with National, MS and EU energy policy targets, as available
- Target Year, 2033, 2035 - TSOs' best estimate respecting NECP and other data compliant with National, MS and EU energy policy targets, as available

Data for Trends and Projections complementary scenario is important to represent latest actual developments. the baseline data shall reflect the actual observed and projected

future pace of the energy transition in each MS, which may deviate from the NECPs and other national policy targets due to delays or deviations in the implementation of national plans. These data should take into account the latest available trends and projections at national level regarding generation, demand and grid infrastructure, including the biennial reporting of MSs under Governance Regulation. This scenario:

- would also be built on bottom-up data collected from TSOs and would focus on Target years 2033 and 2035.
- should reflect delayed commissioning on the supply side (e.g. RES, thermal, storage, or hydro capacity) and may also consider different dimensions (e.g. cross border exchanges, demand projections). For this scenario, TSOs may propose a rescaling factor for the demand time series of the national plan scenario during data collection window or alternatively prepare a dedicated demand dataset in DFT in January 2026.

Further requirements for data:

- Known trends and assumptions regarding retirement, mothballing, and development of new capacity resources, including capacity under CM contracts already awarded at the time of the assessment shall be taken into account, provided these have been approved at a time of data collection under Union State aid rules pursuant to Articles 107, 108 and 109 of the TFEU.
- In line with Article 23(5)(e) of Electricity Regulation, the assessment shall anticipate the likely impact of the measures referred in Article 20(3) of Electricity Regulation. To this aim, the assumptions of the central reference scenarios shall align with the measures and actions defined by MSs pursuant to Article 10(5) of Electricity Regulation and with implementation plans pursuant to Article 20(3) of Electricity Regulation.

PEMMDB App Template Technical Details

Excel Templates

The PEMMDB App generates Excel templates based on a highly detailed data model that is stored on ENTSO-E's GitLab. This model contains the definitions and relationships between all the data fields at both a technical and human-readable level. The Excel templates are generated by the application based on the structure of this data model. When the templates are completed by TSOs and uploaded back into the PEMMDB App, the app first extracts the data from the Excel files and stores it in a RDF database. The data is then validated against a series of rules that are also defined in the data model and discussed in more detail in the below.

Validation Rules

The validation rules for the PEMMDB App are written in a language called SHACL (https://www.w3.org/TR/shacl/) (Shapes Constraint Language). The validation rules are divided into 5 categories, based on an internal classification system:

- **Level 1** - Rules that assess the contents of a single value in a single field. For example, checking that a numeric value is within a certain range.
- **Level 2** - Rules that assess the contents of multiple values within a single sheet
- **Level 3** - Rules that assess the contents of multiple values across multiple sheets/topics within a single Excel file
- **Level 4** - Rules that assess the contents of multiple values across multiple Excel files within a single Market Zone
- **Level 5** - Rules that assess the contents of multiple values across multiple Market Zones

These validation rules are not currently documented within the PEMMDB App documentation but will be added in due course.

Unit Names and Identifiers

The PEMMDB App collects both unit names as stings and RDF:IDs for all generating units. However, for various reasons explained below, neither of these fields are sufficiently reliable to be used as unique identifiers for all unit types in all countries.

At the backend of the PEMMDB App, every unit in the PEMMDB must have a unique identifier. Due to the nature of the PEMMDB, this identifier is not visible to the user and is made by concatenating a number of fields associated with the unit, specifically:

- a string of the sheet name (e.g. "Thermal_", "Renewable_", etc.)
- the unit name,
- the study scenario (Scenario 1, Scenario 2 or both) and
- the commissioning date

This *virtual* identifier is used because other more commonly used identifiers such as the unit name or rdf:IDs (as defined in CIM (https://eepublicdownloads.entsoe.eu/clean-documents/CIM_documents/Grid_Model_CIM/RDF-SyntaxUserGuide_v1-0.pdf)) are not sufficiently reliable for all units types in all countries. Specifically, unit name can often contain special characters or Cyrillic characters that are not supported by the PEMMDB App (note: the underlying database technology used in the app, RDF, does support a wide range of non-Roman alphabet characters using the IRI standard (https://www.w3.org/International/O-URL-and-ident.html), however the Excel layer of the app does not support non-Roman Alphabet characters).

For rfd:IDs, these do not exist for units that are due to be built in the future or aggregations of multiple small units. Additionally, for some countries, new rdf:IDs are generated every time a new Individual Gird Model (IGM) is created, meaning that the units cannot be reliably identified across different IGMs or PEMMDB data collections.

The PEMMDB App allows users to submit unit names that are not unique, which can be useful if the details of a unit have changed within one of the target years. For example, if the Net Maximum Generating Capacity of a unit has increased, the unit could be decommissioned and recomissioned on the same day with the updated capacity.

Cross-Validation with IGMs

There is an ongoing project to replicate the functionalities of the NMD in the PEMMDB App. This will mean that IGMs will also be collected within the PEMMDB App and, in the future, will be used to cross-validate the techno-economic data currently submitted by TSOs through the PEMMDB App. In practical terms, this will mean that if a TSO submits an RDF:ID for a unit, this ID will be cross-validated against the exsiting IGM stored on the PEMMDB app for that country. For units that due to be built in the future, it will not be possible to cross-validate the RDF:ID.

This feature will be implemented in the PEMMDB App in late 2026.

Drop-Down Menus

Drop-down menus are used throughout the Excel templates generated by the PEMMDB App.

There are 3 types of drop-down menus:

- **Static** - These are drop-down menus that are fixed and do not change. They are used for data fields that have a limited number of options. For example, the "Plant Type" field in the "Thermal" sheet has a static drop-down menu with a list of all Thermal plant types.
- **Dynamic** - These are drop-down menus that are generated based on the data in other parts of the same Excel file or based on Market Zone. They are used for data fields that have a variable number of options such as Curve IDs ("Curve IDs" in "PEMMDB App Template Technical Details") or the PECD zones in for a specific country.
- **Dependent** - These are drop-downs that are populated based on the value entered in another field. For example, TYNDP and ERAA use different the Weather Scenarios and, as such, the Weather Scenario drop-down menu will contain different options depending on the value entered in the "Study Scenario" field.

Curve IDs

Curve IDs are used throughout the PEMMDB App to connect details listed in one part of an Excel template file with another set of data points. An examples of this can be seen in the Thermal sheet where the Curve ID is used to link details about generating units with time-series constraints such as Must-run, Derating and Inelastic profiles. The PEMMDB App features cross-validation checks to ensure that all Curve IDs used in the main sheets

(e.g. Thermal, Renewable, Storage, etc.) are also defined in the relevant time-series sheet (e.g. Must-Run, Inelastic, Derating etc.).

Common Data and Default Values

Common Data refers to a set of default values that are used when TSOs have not provided a specific (optional) values for a particular field.

The addition of Common Data is performed when the data is exported from the app and shared with study teams, using a series of in-house-developed scripts.

Data Entry and Empty Rows

The PEMMDB App reads data from the Excel templates in a specific way. The app will read all rows in a sheet until, starting at the first row after the header, until it encounters a series of empty rows. This means that if there are any empty rows within the data, the app will stop reading the data at that point and any subsequent rows will be ignored. Using Excel filters to hide rows does not affect this behaviour, as the app reads the raw data in the Excel file. **This means that it is important to avoid leaving empty rows within the data.**

Data Aggregations

The data collected by the PEMMDB App is at an individual unit level and can accept commissioning and decommissioning dates at the level of a single day. This means that the data can be aggregated to any level required by the study teams, for example, aggregating all units of a specific technology (e.g. gas, wind, solar, etc.) within a Market Zone for a specific year. Aggregations are produced outside of the PEMMDB App using a series of in-house-developed scripts for documents such as the ERAA Call for Evidence (see ENTSO-E webpage here (https://consultations.entsoe.eu/system-development/eraa2025-call-for-evidence-preliminary-data/)). The aggregation scripts use some internal logic to ensure that units that are commissioned or decommissioned at the start or end of the year are treated correctly.

Data Collection Files

Several files are used to collect the data for the ERAA2026 study.

This section describes the content of these different files:

- Main & Thermal (Main and Thermal)
- Renewables (Renewables)
- Hydro Technology (Hydro Technology)
- Electrolysers, Fuel Cells, Batteries & Demand Side Response (Electrolysers, Fuel Cells, Batteries & Demand Side Response)
- Interconnectors (Interconnectors)
- Demand (Demand)

Main and Thermal

The Main and Thermal file contains all general information about the market node (e.g. reserves requirements, redispatch) and Thermal generation (e.g. unit-by-unit, must-run requirements, deratings).

Supply Data

1. Thermal Dispatchable Generation Data Set (Thermal)
2. Must-run and derating Data Set of Thermal Dispatchable Generation (Must-run, Group Must-run, Derating, Group Derating and Inelastic)
3. Other Non-Renewables Generation Data Set (Thermal)
4. Maintenance information
5. Min-Max Unit Maintenance (for ERAA and TYNDP)
6. Planned Outages

General data and requirements of Market Node

1. Operational reserves dataset (Reserves Requirements)
2. Capacity expansion constraints per fuel type for ERAA and TYNDP

Main and Thermal Sheets

- Thermal (Thermal)
- Must-Run (Must-run)
- Group Must-run (Group Must-run)
- Inelastic Supply (Inelastic)
- Derating (Derating)
- Group Derating (Group Derating)

- Reserves Requirements (Reserves Requirements)
- Planned Outages (Planned Outages)
- Expansion Constraints (Expansion Constraints)
- Min-Max Unit Maintenance (Min-Max Unit Maintenance)

Thermal

Sheet Description

The Thermal sheet aims to collect more granular thermal capacities:

- The resolution of the thermal power plants representation is increased to generating unit level, with the ability to create the hierarchy of generating units under groups.
- The time horizon of the thermal data collected is not tied to a single year with this format. Instead, we collect the expected commissioning and decommissioning dates available for the plants/units available now and expected to be available in the future.
- Geographic location of plants, at least defining the PECD region, is now needed. This will be extremely important for any zonal modelling approach.
- Information regarding connectivity of plants in the Network Model, closing the gap between market and network models. As for the geographic location of plants, this will be extremely useful for any zonal modelling approach.
- Other Non-RES technologies are now collected in the Thermal sheet.

Thermal Categories

To ensure consistent treatment of thermal units in Europe, and to avoid deviations in simulations, thermal categories are pre-defined, with fixed technical and economic characteristics (available in PEMMDB Common Data). Thermal units should be assigned to one of the listed types, depending on:

- The fuel (e.g. gas, hard coal, lignite)
- The type (e.g. OCGT, CCGT)
- The age categories (e.g. old 1, old 2, new), which correspond to standard efficiencies. The age category is used to ensure a realistic efficiency is applied, collected commissioning dates are not used to determine efficiency.

Note: Fuel Cells are now included in the Thermal sheet.

CCS (Carbon Capture & Storage) is a sub-category which assumes the CO2 emission factor is reduced by 90% and the standard efficiency reduced by 10% compared to the parent category.

Gas CCGT present 1 and present 2 categories were included in the last data collections to tackle the high number of units in the CCGT new category. Present 2 category has the same common data values as the former CCGT new (with standard efficiency value of 58%). The updated CCGT new category has its standard efficiency increased to 60%. The present 1 category retained all the former CCGT new attributes but with a standard efficiency changed to 56%.

The list below explains how to deal with some other specific units:

- Biofuels: Biofuel units can be defined with the usage of the "Secondary fuel" attribute by selecting biofuel option and the "Secondary fuel usage ratio" attribute. The option to provide custom biofuel price for these units is handled now in the Thermal sheet and can be defined for each unit separately.
- Mixed Fuels (except biofuels): If a unit burns several fuels (one after the other or simultaneously), two of them can be defined, the mostly used as primary through the "PEMMDB Fuel & Type" attribute and a second one through the "Secondary fuel" attribute. In this case the "Secondary fuel usage ratio" attribute is mandatory. With a secondary fuel defined, it will be assumed that the two fuels are used simultaneously.
- Dispatchable CHPs should be assigned to the most commonly used fuel, bearing in mind the consequence on the merit-order.
- CCGT units: Steam and gas turbines of one CCGT block should be merged and represented in one row of the Thermal sheet. If the network representation contains more synchronous machines, the additional rdf:ID fields have to be provided also.
- Fully non-dispatchable units (should it result from a contract or technical constraints) should be included in the "Other non-RES" (if not renewable) data set or reported in Thermal sheet with attribute "Operational Status" set to "Inelastic Supply/Fixed Profile". If reported in Thermal sheet as "Inelastic Supply/Fixed Profile", a separate file will be required to report the timeseries for each specific unit with this status. For the moment, such sophistication is not strictly needed hence it is fine if such capacities are only reported in "Other non-RES" sheet.

- Units that are not mentioned in the list should be assigned to the closest fitting category, taking into account standard values, especially fuel costs and efficiencies.

Data collected in the Thermal sheet

The contains common thermal characteristics applied to each thermal generation unit. Other data must be collected in addition to this, indication on mandatory and optional fields can be found in the templates. Indication on default values is available in the specific Fields document.

Generating unit name (UNIT_NAME)

Model Builder Name: UNIT_NAME

Data Model Name: GU_NAME

Short Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique

Long Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique. Linking market data to network data will primarily use the rdf:ID however unit name may be used to cross-validate the matching of units between datasets.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Group name (GROUP_NAME)

Model Builder Name: GROUP_NAME

Data Model Name: GU_GROUP_NAME

Short Description: Plant owner technology or any other hierarchy level for grouping purposes (not used in the modelling)

Long Description: Plant owner technology or any other hierarchy level for grouping purposes (not used in the modelling)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Generating unit rdf:ID (GEN_UNIT_RDFID)

Model Builder Name: GEN_UNIT_RDFID

Data Model Name: GU_MRID

Short Description: Unique ID for each generating unit

Long Description: The rdf:ID is the link between the network and market model The value should match with the network model that will be created in later processes Where these are stable between different CGM versions they will be extremely useful to match

network and market models If rdf:IDs are not stable please indicate in last column which version of CGM the rdf:ID refers to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

PECD zone (PECD_ZONE)

Model Builder Name: PECD_ZONE

Data Model Name: PECD_ZONE_ONSHORE

Short Description: PECD zone to which this unit / data applies to

Long Description: PECD zone where the generating unit is located (selectable in the dropdown-list) This is now a mandatory field as it will directly support zonal modelling whenever needed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Latitude (LAT_DEG)

Model Builder Name: LAT_DEG

Data Model Name: GU_LATITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical latitude and longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when available. Positive lattitudes are North of the Equator. Negative lattitudes are South of the Equator

Attributes

Attribute	Value
Minimum value	26.0
Maximum value	72.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Longitude (LON_DEG)

Model Builder Name: LON_DEG

Data Model Name: GU_LONGITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when available. Positive longitudes are East of London. Negative longitudes are West of London

Attributes

Attribute	Value
Minimum value	-26.0
Maximum value	50.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Commissioning date (COMMISSIONING_DATE)

Model Builder Name: COMMISSIONING_DATE

Data Model Name: GU_COMMIS_DATE

Short Description: First day of commercial availability of the unit

Long Description: Start (commisioning) date from which the generation unit is operationally available to generate power

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	0

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Decommissioning date official (DECOMMISSIONING_DATE_OFFICIAL)

Model Builder Name: DECOMMISSIONING_DATE_OFFICIAL

Data Model Name: GU_OFF_DECOM_DATE

Short Description: Official end date after which the unit is permanently unavailable

Long Description: Official end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to an official (public) source Used

in studies only if the expected date is not provided

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Decommissioning date expected (DECOMMISSIONING_DATE_EXPECTED)

Model Builder Name: DECOMMISSIONING_DATE_EXPECTED

Data Model Name: GU_EXP_DECOM_DATE

Short Description: Expected end date after which the unit is permanently unavailable

Long Description: Expected end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to TSO best knowledge at the time of data collection Used in studies as default

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	73415

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Fuel type (PEMMDB_FUEL_TYPE)

Model Builder Name: PEMMDB_FUEL_TYPE

Data Model Name: GU_FUEL_TYPE

Short Description: Fuel type of the generating unit

Long Description: Fuel type of the generating unit. Fuel options vary depending on the file and sheet. For Thermal units types attributes and default values (used when no data is provided) are further detailed in the Common Data dataset. Additionally for Thermal units relationship with Secondary and Startup Fuels is detailed in Study Team modelling documentation.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Plant type (PEMMDB_PLANT_TYPE)

Model Builder Name: PEMMDB_PLANT_TYPE

Data Model Name: GU_PLANT_TYPE_THERMAL

Short Description: Technology type of the thermal generating unit

Long Description: Technology type of the thermal generating unit. Thermal units also have a PEMMDB Fuel Type which further specifies the attributes of the units

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Other Non-RES classification (OTHER_NON_RES_CLASSIFICATION)

Model Builder Name: OTHER_NON_RES_CLASSIFICATION

Data Model Name: OTHER_NON_RES_CLASSIFICATION

Short Description: Whether the plant it classified as 'Other Non-RES'

Long Description: Whether the plant it classified as 'Other Non-RES'

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	No

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Startup fuel type (STARTUP_FUEL_TYPE)

Model Builder Name: STARTUP_FUEL_TYPE

Data Model Name: TH_START_FUEL

Short Description: Fuel used during start-up of the generating unit

Long Description: Fuel used for the start-up of the unit If empty the primary fuel will be assumed The start-up fuel will be used for the start-up cost calculation

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	Primary fuel

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Secondary fuel (SCND_FUEL)

Model Builder Name: SCND_FUEL

Data Model Name: TH_SECOND_FUEL

Short Description: Secondary fuel that is used as infeed to power the generating unit

Long Description: Selectable value of secondary fuel types it will be used to calculate the appropiate CO2 emission and fuel cost

- If biofuel is selected CO2 emission will be considered zero for the biofuel part

CO2 emission [t/MWh] =CO2 factor [kg/GJ] * (1-biofuel ratio (SCND_FUEL_RT) *3.6 [GJ/MWh]/efficiency/1000

- If other fuel type is selected CO2 emission factor of the secondary fuel type will be taken into account and efficiency belonging to primary fuel & plant category will be used

CO2 emission [t/MWh] =(CO2 factor of primary fuel [kg/GJ] * (1-secondary fuel ratio (SCND_FUEL_RT) + CO2 factor of secondary fuel [kg/GJ]*secondary fuel ratio (SCND_FUEL_RT))*3.6 [GJ/MWh]/efficiency based primary fuel & plant category /1000

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	Primary fuel

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Secondary fuel ratio (SCND_FUEL_RT)

Model Builder Name: SCND_FUEL_RT

Data Model Name: TH_SECOND_FUEL_RATIO

Short Description: Average secondary fuel usage

Long Description: Average secondary fuel usage of the unit (as a ratio between 0 and 1) it will be used to calculate the appropiate CO2 emission and fuel cost

- Calculation of CO2 emission described under SCND_FUEL description
- If the cell is left empty the value of 0 will be considered
- If secondary fuel ratio (SCND_FUEL_RT) is not 0 fuel price will be calculated based on both primary and secondary fuel price and secondary fuel ratio (Fuel price = Fuel_price_primary* (1-SCND_FUEL_RT) + Fuel_price_secondary * SCND_FUEL_RT)

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	0

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Net maximum generating capacity (NET_MAX_GEN_CAP)

Model Builder Name: NET_MAX_GEN_CAP

Data Model Name: GU_MAX_NET_CAPACITY

Short Description: Maximum electrical net active power available on the market

Long Description: Maximum electrical net active power that a power plant can offer to the market (maximum electrical net active power that a power plant can feed-in continuously without exceeding the designed physical limits of the unit) Any capacity potentially reserved for ancillary services (e g FCR and FRR) must NOT be subtracted from the Net Maximum Generating Capacity

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Net minimum stable generation (NET_MIN_STAB_GEN)

Model Builder Name: NET_MIN_STAB_GEN

Data Model Name: GU_MIN_STABLE_CAPACITY

Short Description: Minimum active power at which the generating module can be operated stably for an unlimited time should be lower than net maximum generating capacity (NET_MAX_GEN_CAP)

Long Description: Minimum active power as specified in the connection agreement or as agreed between the relevant system operator and the power generating facility owner at which the power generating module can be operated stably for an unlimited time should be lower than net maximum generating capacity (NET_MAX_GEN_CAP)

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Group-based derating curve ID (GRP_D_CURVE_ID)

Model Builder Name: GRP_D_CURVE_ID

Data Model Name: GROUP_DERATING_CURVE

Short Description: ID chosen in the Group Derating sheet (if provided)

Long Description: Curve ID used in the Group Derating sheet to identify the referenced group derating curve If generating unit level data is provided (and the group has more

generating units) then every generating unit in the group must have the same group based derating curve ID For further information see Group derating sheet descriptions

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Derating curve ID (DERATING_CURVE_ID)

Model Builder Name: DERATING_CURVE_ID

Data Model Name: DERATING_CURVE

Short Description: ID chosen in the Derating sheet (if provided)

Long Description: Curve ID used in the Derating sheet (row '5') to identify the referenced derating curve For further information see Derating sheet descriptions

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

NCV efficiency standard (STD_EFF_NCV)

Model Builder Name: STD_EFF_NCV

Data Model Name: TH_EFFICIENCIES_NCV_STANDARD

Short Description: Aimed to be used for consistency checks and common data validation; not directly applied in the model

Long Description: Ratio between Net Electrical power output and Net calorific value of the burned fuel

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	Common data

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Optional

NCV efficiency min load (EFF_NCV_MIN_LD)

Model Builder Name: EFF_NCV_MIN_LD

Data Model Name: TH_EFFICIENCIES_NCV_MINIMUM

Short Description: Aimed to be used for consistency checks and common data validation; not directly applied in the model

Long Description: Ratio between Net Electrical power output and Net calorific value which is usable heat of the burned fuel excluding water vapor losses at units minimum load

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Group-based must-run curve ID (GRP_MRUN_CURVE_ID)

Model Builder Name: GRP_MRUN_CURVE_ID

Data Model Name: GROUP_MUST_RUN_CURVE

Short Description: ID chosen on the Group must-run sheet (if provided) has to be the same for all generating units under the same plant

Long Description: Curve ID used in the Group Must-run sheet to identify the referenced group must-run curve If generating unit level data is provided (and the group has more generating units) then every generating unit in the group must have the same group based must-run curve ID The must-run criteria defined with the group based curve will be respected even if some of the units are not available (forced outage or maintenance) in the plant (if it⍁s possible with the remaining units) One defined plant based must-run curve can be used for more plants which will have their must-run criteria defined independently but with the same ratios For further information see Group must-run sheet description also

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Must-run curve ID (GEN_UNT_MRUN_CURVE_ID)

Model Builder Name: GEN_UNT_MRUN_CURVE_ID

Data Model Name: MUST_RUN_CURVE

Short Description: ID chosen on the Gen unit must-run sheet (if provided)

Long Description: Curve ID used in the Must-run sheet to identify the referenced must-run curve For further information see Must-run sheet descriptions

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Inelastic curve ID (GEN_UNT_INELASTIC_ID)

Model Builder Name: GEN_UNT_INELASTIC_ID

Data Model Name: INELASTIC_CURVE

Short Description: ID chosen on the Gen unit inelastic sheet (if provided)

Long Description: Curve ID used in the inelastic sheet to identify the referenced inelastic curve For further information see Inelastic sheet descriptions

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Unit maintenance curve ID (CURVE_ID)

Model Builder Name: CURVE_ID

Data Model Name: UNIT_MAINTENANCE_CURVE_ID

Short Description: Curve ID in the 'Min-Max Unit Maintenance' sheet that links to this unit

Long Description: Curve ID in the 'Min-Max Unit Maintenance' sheet that links to this unit. If there is a restriction on weekly maximum and minimum number of units on maintenance for a certain group of units Curve ID will be used to link the group of units to the restrictions defined 'Min-Max Unit Maintenance' sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Forced outage rate (FORCED_OUTAGE_RATE)

Model Builder Name: FORCED_OUTAGE_RATE

Data Model Name: GU_FORCED_OUTAGE_RATE

Short Description: Probability of expected outages on annual basis Zero values are taken into account

Long Description: Probability of expected outages on annual basis expressed as the ratio of days in a year (e g 0 1 (10%) would represent that the unit is expected to be unavailable because of forced outages for 36 5 days on average for a year) The duration of each outage event is defined by the Mean Time to Repair

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Mean repair time (MEAN_TIME_REPAIR)

Model Builder Name: MEAN_TIME_REPAIR

Data Model Name: GU_MEAN_TIME_TO_REPAIR

Short Description: Average duration of a forced outage event zero values are taken into account

Long Description: Average duration of a forced outage event on the unit. Default figures are listed in the Common Data sheet. Custom duration can be defined in the Mean time

to repair (number of days) data point. It does not add up with forced outage rate but rather define how many days outage will continue once it occured.

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	365.0
Type	Float
Unit	days
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Planned outage annual days (PLAN_OUTAGE_ANNUAL_DAYS)

Model Builder Name: PLAN_OUTAGE_ANNUAL_DAYS

Data Model Name: GU_PLAN_OUTAGE

Short Description: Number of days of planned outage

Long Description: Number of days where the unit is on planned outage on an annual basis

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	365.0
Type	Integer
Unit	days
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Planned outage annual windows (PLAN_OUTAGE_ANNUAL_WIN)

Model Builder Name: PLAN_OUTAGE_ANNUAL_WIN

Data Model Name: GU_PLAN_OUTAGE_WINDOWS

Short Description: Number of windows where the unit is on planned outage on an annual basis

Long Description: Number of windows where the unit is on planned outage on an annual basis The total number of days provided In the previous attribute will be split in a number different outages windows defined by this ⍰number of windows⍰ attribute

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	50.0
Type	Integer
Unit	windows
Default value	1

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Planned outage min duration (PLAN_OUTAGE_MIN_HRS_PWIN)

Model Builder Name: PLAN_OUTAGE_MIN_HRS_PWIN

Data Model Name: GU_PLAN_OUTAGE_MIN_HOUR_WINDOWS

Short Description: Minimum number of hours per planned outage window

Long Description: Minimum number of hours per planned outage window where the unit is on planned outage on an annual basis

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Integer
Unit	hours/window
Default value	24

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Planned outage min winter period (PLAN_OUTAGE_WINTER)

Model Builder Name: PLAN_OUTAGE_WINTER

Data Model Name: GU_PLAN_OUTAGE_WINTER_RATIO

Short Description: Lower bound of the outage period that should occur in winter Zero values are taken into account

Long Description: Lower bound of the outage period that should occur in winter Winter is defined here as 6 months from October to March inclusive with summer being defined as 6 months from April to September inclusive Leaving the field empty means no target value will be taken into account for maintenance optimization and the resulting value may vary between 0% and 100% It may happen that optimisation will allocate more days of outage in winter periods than the provided value as this is treated as a lower bound

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Maintenance restriction start date (MAIN_RESTRICT_START_DATE)

Model Builder Name: MAIN_RESTRICT_START_DATE

Data Model Name: GU_MAINT_RESTRIC_START

Short Description: Starting date of the maintenance restriction interval valid for calendar year 2018 (=2007)

Long Description: Starting date (month and day) of an interval when the unit shouldn□t be on planned maintenance Dates shall be valid for calendar year 2018 (=2007)

Attributes

Attribute	Value
Minimum value	2018.0
Maximum value	2018.0
Type	Date (start)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Maintenance restriction end date (MAIN_RESTRICT_END_DATE)

Model Builder Name: MAIN_RESTRICT_END_DATE

Data Model Name: GU_MAINT_RESTRIC_END

Short Description: Ending date of the maintenance restriction interval valid for calendar year 2018 (=2007)

Long Description: End date (month and day) of an interval when the unit shouldn□t be on planned maintenance Dates shall be valid for calendar year 2018 (=2007)

Attributes

Attribute	Value
Minimum value	2018.0
Maximum value	2018.0
Type	Date (end)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Maintenance exclusion start (MAINTENANCE_EXCLUSION_PERIOD_START)

Model Builder Name: MAINTENANCE_EXCLUSION_PERIOD_START

Data Model Name: GU_MAINTENANCE_EXCLUSION_PERIOD_START

Short Description: Starting date of the exclusion period from endogenous maintenance calculations

Long Description: Exclusion period is used to exclude certain thermal units from endogenous maintenance calculations Maintenance will not be calculated through an optimization process for that thermal unit from year ⍰Maintenance optimization exclusion period ⍰ start year⍰ until ⍰Maintenance optimization exclusion period ⍰ end year⍰ both inclusive It is expected that a maintenance profile is provided in the 'Planned Outages' sheet for the period in which the thermal unit is excluded from endogenous maintenance calculations If no maintenance profile is provided in the 'Planned Outages' sheet for the period in which the thermal unit is excluded from endogenous maintenance calculations such unit will not be assigned with any maintenance profile within that period The maintenance schedule in the 'Planned Outages' sheet has the highest hierarchy and such profiles will be taken into account for the corresponding target years regardless if the target years are included or not in the 'maintenance optimization exclusion period'

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Date (start)
Unit	yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Maintenance exclusion end (MAINTENANCE_EXCLUSION_PERIOD_END)

Model Builder Name: MAINTENANCE_EXCLUSION_PERIOD_END

Data Model Name: GU_MAINTENANCE_EXCLUSION_PERIOD_END

Short Description: Ending date of the exclusion period from endogenous maintenance calculations

Long Description: Exclusion period is used to exclude certain thermal units from endogenous maintenance calculations Maintenance will not be calculated through an optimization process for that thermal unit from year ☐Maintenance optimization exclusion period ☐ start year☐ until ☐Maintenance optimization exclusion period ☐ end year☐ both inclusive It is expected that a maintenance profile is provided in the 'Planned Outages' sheet for the period in which the thermal unit is excluded from endogenous maintenance calculations If no maintenance profile is provided in the 'Planned Outages' sheet for the period in which the thermal unit is excluded from endogenous maintenance calculations such unit will not be assigned with any maintenance profile within that period The maintenance schedule in the 'Planned Outages' sheet has the highest hierarchy and such profiles will be taken into account for the corresponding target years regardless if the target years are included or not in the 'maintenance optimization exclusion period'

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Date (end)
Unit	yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Ramp up (RAMP_UP)

Model Builder Name: RAMP_UP

Data Model Name: GU_RAMP_UP

Short Description: Net increase in power output

Long Description: Net increase in power output that the generating unit can obtain in a given period of time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW/min
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Ramp down (RAMP_DOWN)

Model Builder Name: RAMP_DOWN

Data Model Name: GU_RAMP_DOWN

Short Description: Net decrease in power output

Long Description: Net decrease in power output that the generating unit can obtain in a given period of time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW/min
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Min hour up (MIN_HOUR_UP)

Model Builder Name: MIN_HOUR_UP

Data Model Name: GU_MIN_HOUR_UP

Short Description: Minimum number of hours that the generating unit shall be on

Long Description: The minimum number of hours the unit must be ⍰on⍰ in any commitment cycle

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Float
Unit	hours
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Min hour down (MIN_HOUR_DOWN)

Model Builder Name: MIN_HOUR_DOWN

Data Model Name: GU_MIN_HOUR_DOWN

Short Description: Minimum number of hours that the generating unit shall be off

Long Description: Minimum number of hours between the generating unit shutdown and the following start-up

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Float
Unit	hours
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Startup time (STARTUP_TIME)

Model Builder Name: STARTUP_TIME

Data Model Name: GU_STARTUP_TIME

Short Description: Time to start-up the generating unit

Long Description: The time interval from the beginning of the start-up sequence to the generator minimum stable generation

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	168.0
Type	Float
Unit	hours
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Shutdown time (SHUTDOWN_TIME)

Model Builder Name: SHUTDOWN_TIME

Data Model Name: GU_SHUTDOWN_TIME

Short Description: Time to shut down the generating unit

Long Description: Minimum time to shut down the generating unit from minumum stable operation level (i e the time of the stop curve)

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	168.0
Type	Float
Unit	hours
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Rated capacity (RATED_CAPACITY_HREF)

Model Builder Name: RATED_CAPACITY_HREF

Data Model Name: GU_RATED_CAPACITY

Short Description: Nominal capacity of the generating unit

Long Description: Installed nominal capacity of the generating unit

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MVA
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Startup fuel consumption (START_UP_FUEL_CONSUM)

Model Builder Name: START_UP_FUEL_CONSUM

Data Model Name: GU_START_FUEL_CONS

Short Description: Fuel consumption during start-up

Long Description: Fuel consumption during start-up refers solely to the amount of fuel used when starting operation of the unit. It only reflects the fuel quantity and its

associated cost. If no value is provided the Common Data value is used for that PEMMDB_FUEL_TYPE

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	Net GJ/MW started
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Variable OM costs (VAR_OM_COST)

Model Builder Name: VAR_OM_COST

Data Model Name: GU_ECO_VAR_COSTS

Short Description: Non-fuel operations and maintenance cost

Long Description: Non-fuel operations and maintenance cost that includes cost of consumable materials (ammonia limestone water etc) production by products handling (ash slug etc) and maintenance that may be scheduled based on the number of operating hours or start-stop cycles of the plant The info is aimed to be use for consistency checks and common data validation; and it is not directly applied in the model

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	9999999.0
Type	Float
Unit	EUR/MWh
Default value	Common data

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Fuel transport cost (FUEL_TRANS_COST)

Model Builder Name: FUEL_TRANS_COST

Data Model Name: GU_FUEL_TRANSPORT_COSTS

Short Description: Fuel transport cost

Long Description: Cost of transporting fuel to the generator for both generation and unit starts

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	EUR/Net GJ
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Fixed OM costs (FIXED_OM_COSTS)

Model Builder Name: FIXED_OM_COSTS

Data Model Name: GU_FIX_OM_COSTS

Short Description: Operations and maintenance annual fixed charge

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc The info is aimed to be use for consistency checks and common data validation and it is not directly applied in the model

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	EUR/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

CAPEX (CAPEX)

Model Builder Name: CAPEX

Data Model Name: GU_CAPEX

Short Description: One-off capital expenditures of the asset

Long Description: One-off capital expenditures of the generating unit

This information is aimed to be use for consistency checks and common data validation although models will use common data values for modeling (not these individual values).

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	99999999.0
Type	Float
Unit	EUR/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Output constraints (OP_CONSTRAINT)

Model Builder Name: OP_CONSTRAINT

Data Model Name: GU_OUT_CONSTRAINTS

Short Description: Maximum annual generation constraint

Long Description: Maximum annual generation constraint when relevant for any technical or legal reason

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	GWh/year
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Annual operating time limit (ANNUAL_OP_TIME_LIMIT)

Model Builder Name: ANNUAL_OP_TIME_LIMIT

Data Model Name: GU_ANNUAL_OP_TIME_LIMIT

Short Description: Operating time limit

Long Description: Maximum hours per year that the generating unit can operate (max 8760) when relevant for any technical or legal reason

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Integer
Unit	hours/year
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

EVA inclusion (INCL_EVA)

Model Builder Name: INCL_EVA

Data Model Name: GU_EVA_INCLUDED

Short Description: Indication on whether to include the unit in EVA

Long Description: Yes/No parameter indicating whether the unit should be included in the Economic Viability Assessment (EVA). This assessment part of the ERAA process evaluates the economic viability of the unit and helps determine if it should be decommissioned earlier than initially planned

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	No

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Not used
Seasonal Outlook	Not used

EVA exclusion reason (EVA_NT_REASON)

Model Builder Name: EVA_NT_REASON

Data Model Name: GU_EVA_REASON_NOT_SUBJECT_THERMAL

Short Description: Selectable if not subject to EVA

Long Description: Reason that justifies capacity exclusion from EVA. To be specified only if the generating unit is not subject to EVA. There are several options: 1- Unit has an awarded capacity mechanism contract (CM contract). 2- Unit has must-run commitment to provide heat/steam/waste disposal delivering revenues not modelled in EVA (Must-run - CHP and waste) 3- Unit receives revenue from another source excluding CM heat/steam/waste or government policy (Other non-policy revenues) 4- Technology is formally excluded from EVA e.g. nuclear (Excluded tech) 5 - Existing unit is driven by a certain policy (Policy Certain (existing)) 6 - Expected new-build capacity is driven by a certain policy (Policy Certain (new)) 7 - Expected new-build capacity is driven by either an uncertain policy or a certain policy with high deployment risk (Policy Uncertain)). Some categories not applicable for all technologies.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Not used
Seasonal Outlook	Not used

EVA exclusion start date (EVA_EXCL_START_DATE)

Model Builder Name: EVA_EXCL_START_DATE

Data Model Name: GU_EVA_EXCLUSION_START

Short Description: Starting date of the exclusion from EVA

Long Description: Starting date of the exclusion from EVA if the generating unit is temporarily excluded from EVA (i e CM contract starting date)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Date (start)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

EVA exclusion end date (EVA_EXCL_END_DATE)

Model Builder Name: EVA_EXCL_END_DATE

Data Model Name: GU_EVA_EXCLUSION_END

Short Description: End date of the exclusion from EVA

Long Description: End date of the exclusion from EVA if the generating unit is temporarily excluded from EVA (i e CM contract ending date)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Date (end)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

EVA mothballing possible (EVA_UNIT_UNVIABLE)

Model Builder Name: EVA_UNIT_UNVIABLE

Data Model Name: GU_EVA_OWNER_MOTHBALL

Short Description: If the unit can be mothballed if not economically viable at some point

Long Description: A Yes/No parameter to indicate if the unit can be mothballed if not economically viable at some point but remains on the grid to be de-mothballed when it becomes viable again If the unit is already mothballed in the system (see Operational

Status set at mothballed) then the unit can be de-mothballed if it becomes viable The savings in fixed costs are lower for mothballing than for complete decommissioning

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	No

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

EVA extendable life (EVA_UNIT_LIFE_EXT)

Model Builder Name: EVA_UNIT_LIFE_EXT

Data Model Name: GU_EVA_LIFE_EXTENDED

Short Description: If the unit can be refurbished instead of being decommissioned

Long Description: A Yes/No parameter to indicate if the unit can be refurbished instead of being decommissioned when the decommissioning date is reached

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	No

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

CHP (CHP)

Model Builder Name: CHP

Data Model Name: GU_CHP_TYPE

Short Description: If the (thermal) generating unit also generates heat that is further used as a byproduct

Long Description: A True/False parameter to define whether the unit is a CHP (Combined Heat and Power) unit If the (thermal) generating unit also generates heat that is further used as a byproduct (e g to supply a heat grid or an industrial process?)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	Not CHP

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

CHP dispatch profile (HEAT_STEAM_REVENUE)

Model Builder Name: HEAT_STEAM_REVENUE

Data Model Name: TH_CHP_HEAT_STEAM_REVENUE

Short Description: Indication on how the CHP dispatch should be modelled

Long Description: CHP dispatch should be modelled based on the must-run approach. You can choose must-run from dropdown and provide a profile for CHP dispatching. To model marginal costs more realistically heat/steam revenue approach shoud be chosen instead when such information is available.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	Revenue profile

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Heat consumer sector (SECTOR)

Model Builder Name: SECTOR

Data Model Name: TH_CHP_SECTOR

Short Description: Indication of which type of heat supply the CHP plant is used for

Long Description: Indication of which type of heat supply the CHP plant is used for (e g district heating industrial heating steam processes) The data point is currently for information only and relevant for future implementation of heat revenues

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	Unknown

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Installed thermal capacity (INSTALLED_THERMAL_CAPAC)

Model Builder Name: INSTALLED_THERMAL_CAPAC

Data Model Name: TH_CHP_INSTALLED_CAP

Short Description: Installed thermal capacity of the generating unit

Long Description: Installed thermal capacity refers to the maximum heat output that generating unit can produce. It is calculated by dividing the unit⍰s installed electrical capacity its Power-to-Heat (P2H) ratio

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MWth
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Annual heat production (AVG_ANNUAL_HEAT_STEAM)

Model Builder Name: AVG_ANNUAL_HEAT_STEAM

Data Model Name: TH_CHP_ANNUAL_PRODUCTION

Short Description: Average heat/steam that is produced in 2020 by the generating unit

Long Description: Average heat/steam production in 2020. It can be calculated using the following formula [(FLH of a unit) x (installed electrical capacity) / (P2H ratio)] or [(capacity factor) x 8760 x (installed electrical capacity) / (P2H ratio)]. The development

of annual heat/steam production for the following years is computed using the Expected change in annual heat production

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	GWhth
Default value	0

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Expected change heat production (HEAT_STEAM_CHNG_AVG_ANN_QTY)

Model Builder Name: HEAT_STEAM_CHNG_AVG_ANN_QTY

Data Model Name: TH_CHP_CHANGE_AVERAGE_QTY

Short Description: Average annual heat/steam production incremental change compared to baseline 2020 value

Long Description: Average annual heat/steam production incremental change based on the 2020 baseline value. The ratio should be computed as increase or decrease in annual heat/steam production in percentiles

Attributes

Attribute	Value
Minimum value	-1.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	0

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Estimated heat price (HEAT_STEAM_EST_PRICE)

Model Builder Name: HEAT_STEAM_EST_PRICE

Data Model Name: TH_CHP_ESTIMATED_PRICE_HEAT

Short Description: Price received for heat/steam ⍰ price in 2020

Long Description: Revenue received from heat/steam production in 2020. The average revenue per produced thermal GJ heat/steam supply. When the price is marked as dependent on gas price trajectory then the heat price is changed proportionally to the change in gas price. If this paremeter is not provided an assumption will be made by ENTSO-E

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999.0
Type	Float
Unit	EUR/GJ
Default value	Assumption made by ENTSO-E

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Gas price trajectory dependent (HEAT_STEAM_DEPND_GAS)

Model Builder Name: HEAT_STEAM_DEPND_GAS

Data Model Name: HEAT_STEAM_DEPND_GAS

Short Description: Heat/steam prices dependencies on the gas price trajectory

Long Description: Indication on whether the price for heat/steam follows the gas price change This data point should be marked as ☑Yes☑ for all heating networks where a gas boiler is the main backup unit for CHP units

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	No

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Number of units (NO_UNITS)

Model Builder Name: NO_UNITS

Data Model Name: TH_OTHER_NON_RES_NUMBER_UNITS

Short Description: For aggregated Other Non-RES units approximately how many units have been aggregated

Long Description: Entries within the Renewables sheet can represent multiple aggregated generating units of the same type. This field is designed to record an

approximation of the number of the number of units that have been aggregated for aggregated Other Non-RES units

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	9999.0
Type	Integer
Unit	units
Default value	0

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Market offer price (MARKET_OFFER_PRICE)

Model Builder Name: MARKET_OFFER_PRICE

Data Model Name: TH_OTHER_NON_RES_MARKET_OFFER_PRICE

Short Description: Price offered for production of 1 MW electricty by Other Non-RES aggregated units

Long Description: Price at which aggregated thermal power units Other Non-RES are willing to sell 1 MWh of electricity on the market. This price typically reflects the marginal cost of production

Attributes

Attribute	Value
Minimum value	-999.0
Maximum value	999.0
Type	Float
Unit	EUR/MWh
Default value	0

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Custom biofuel price (CUST_BIOF_PRICE)

Model Builder Name: CUST_BIOF_PRICE

Data Model Name: TH_FUEL_PRICE_BIO

Short Description: The price of the biofuel used by the unit

Long Description: The price of the biofuel used by the unit

- If the cell is left empty the same price assumption is made for biofuel as the primary fuel type but CO2 emission will be considered zero for the biofuel part

CO2 emission [t/MWh] =CO2 factor [kg/GJ] * (1-biofuel ratio (SCND_FUEL_RT) *3.6 [GJ/MWh]/efficiency/1000

- If the cell is not empty custom biofuel price will be taken into account in fuel price calculation

Attributes

Attribute	Value
Minimum value	-999.0
Maximum value	999.0
Type	Float
Unit	EUR/Net GJ
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Must-run

Sheet Description

It is important to indicate so called must-run obligations, which can have many causes (heat requirements, technical, economic/subsidies/taxes, environmental, etc.) and should not be confused with minimum stable generation.

Climatic years associated with must-runs can now be selected in these sheets.

Reasons that could induce must-run obligation include:

- Network constraints (overload management, voltage control)
- Specific policies (subsidies of lignite mines)
- Minimum number of units needed to provide system services
- Heat constraints
- Reasons that, in most cases, should not induce must-run obligation include:
- Fully non-dispatchable units such as biomass, waste (if unit is fully non-dispatchable, it should be specified in either the sheet "Other Non-RES")
- Low flexibility. This can be represented by other parameters such as "Minimum stable generation" and "Ramp up/down rate"

Data collected in the Must-run sheet

This worksheet contains the hourly ratios of possible unit based must-run criteria to be modelled in the market simulations. The data provider should fill a separate column for each different hourly curve (8760 values). In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs in this sheet and in the unit based "Must-run curve ID" column in the sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After

validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Must-run curve ID" column in the sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated Excel files for the constant period.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The defined curves can be referenced by several units. In this case these units will still be modelled independently.

The provided ratios will be multiplied by the net capacity of the unit that is referencing the curve to get the volume that must be committed on this unit. The net capacities used for determining the amount of must-run shouldn"t include any derating effect.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Must run ratio (MUST_RUN_RATIO)

Model Builder Name: MUST_RUN_RATIO

Data Model Name: MUST_RUN_RATIO

Short Description: Lower bound of the instantaneous output

Long Description: Ratio of the maximum generating capacity that represents a lower bound of the instantaneous output

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Group Must-run

Sheet Description

For thermal generation it is important to indicate so called must-run obligations, which can have many causes (heat requirements, technical, economic/subsidies/taxes, environmental, etc.) and should not be confused with minimum stable generation.

Climatic years associated with must-runs can now be selected in these sheets.

Reasons that could induce must-run obligation include:

- Network constraints (overload management, voltage control)
- Specific policies (subsidies of lignite mines)
- Minimum number of units needed to provide system services
- Heat constraints

Reasons that, in most cases, should not induce must-run obligation include:

- Fully non-dispatchable units such as biomass, waste (if unit is fully non-dispatchable, it should be specified in either the sheet "Other Non-RES")
- Low flexibility. This can be represented by other parameters such as "Minimum stable generation" and "Ramp up/down rate"

Data collected in the Group Must-run sheet

This worksheet contains the hourly ratios of possible Group-based must-run criteria to be modelled in the market simulations as well as the number of units to allocate the group must-run obligation. The data provider should fill two separate columns for each different hourly curve of must run ratio (8760 values) and units to allocate must run as they go in pairs. In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs if this sheet and in the "Group based must-run curve ID" column in the Thermal sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Group based must-run curve ID" column in the Thermal sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The sheet enables the definition of the "Number of units to be used to allocate Group must-run" attribute. If provided, only this amount of units need to run to provide the calculated must-run commitment from the group must-run criteria. The attribute enables to provide must-run with only a sub-set of the generators in the group regardless of any planned or forced outage event.

The defined curves can be referenced by more unit groups. In this case these groups will still be modelled independently, but the must-run ratio values will be the same for all of them.

The generating units defined under the same group, must have the same group based must-run curve ID and the must-run criteria will be met (if possible) with the available units (which are not on planned/unplanned outage).

The provided ratios will be multiplied by the sum of net generating capacities of the generating units defined under the group to get the generation that has to be committed on the units of the group. The net generating capacities used for determining the amount of must-run shouldn"t include any derating effect.

The allocation of this MW value has the following rules: when the "Must-run units" is defined (and has to be lower than the number of units in the group): then (as an additional constraint) this value act as a minimum number units that have to be committed to at least their technical minimum generation (PMin).

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Must-run units (MUST_RUN_NO_UNITS)

Model Builder Name: MUST_RUN_NO_UNITS

Data Model Name: MUST_RUN_NBR_UNIT_TO_ALLOCATE

Short Description: Total number of units to produce the minimum must-run output

Long Description: Total number of units that together must have a combined minimum power output equal to the must-run minimum power out

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	9999.0
Type	Integer
Unit	units
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Must run ratio (MUST_RUN_RATIO)

Model Builder Name: MUST_RUN_RATIO

Data Model Name: MUST_RUN_RATIO

Short Description: Lower bound of the instantaneous output

Long Description: Ratio of the maximum generating capacity that represents a lower bound of the instantaneous output

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Inelastic

Sheet Description

This worksheet contains the hourly ratios of possible unit based inelastic profile criteria to be modelled in the market simulations. The data provider should fill a separate column for each different hourly curve (8760 values). In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs in this sheet and in the unit based "Inelastic curve ID" column in the sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Inelastic curve ID" column in the sheet.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The defined curves can be referenced by several units. In this case these units will still be modelled independently.

The provided ratios will be multiplied by the net capacity of the unit that is referencing the curve to get the inelasticity on this unit. The net capacities used for determining the amount of inelastic profile shouldn"t include any derating effect.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Inelastic profile (INELASTIC_RATIO)

Model Builder Name: INELASTIC_RATIO

Data Model Name: INELASTIC_PROFILE

Short Description: Ratio of the net maximum generation capacity to which the power output of the generating unit must be equal to

Long Description: Ratio of the net maximum generation capacity to which the power output of the generating unit must be equal to

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Derating

Sheet Description

Derating data reflects that the total installed capacity of a unit is not always available for market optimization. Potential causes include:

- Units providing system service reserve. If you specify a value here, do not include this in the Reserve Requirements sheet.
- Units whose output power is limited by e.g., transmission constraints, cooling constraints, others.
- Units using inferior quality fuel.
- The default derating value is 100%, which is equal to a reduction value of 0%. TSOs should provide hourly values possibly for the entire year. In case of constant curves, please provide only the first hourly value.

The modelling of derating introduced here is independent of the forced outage modelling method also called derating. The reduction of Net Capacity (NC) introduced with this parameter is independent of the forced outage and maintenance modelling in the studies: units can still be considered unavailable in the model because of maintenance and forced outage regardless of any defined derating.

Providing data sets related to derating follows the same logic as for must-run. The two specific sheets collect the derating curves related to unit groups and individual units.

Data collected in the Derating sheet

To model constraining effects, like fuel availability and quality, inner transmission constraints, heat/cold waves etc. time-dependent derating factors can be provided for each unit that was defined on the sheet.

The Derating worksheet contains the hourly ratio curves, which can be assigned to units. The data provider should fill a separate column for each different hourly curve (8760 values). In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs in this sheet and in the generation unit based "Derating curve ID" column in the sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Derating curve ID" column in the sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

The defined curves can be referenced by several units. In this case these units will still be modelled independently, but the derating ratio values will be the same for all of them.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The effective net capacity of a unit with defined derating curve is its original net capacity multiplied by the derating ratio value of the given hour in the simulation.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Reason derating (DERATING_REASON)

Model Builder Name: DERATING_REASON

Data Model Name: DERATING_REASON

Short Description: Reason why the derating curve is in place

Long Description: Reason why the derating curve is in place

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Derating ratio (DERATING_RATIO)

Model Builder Name: DERATING_RATIO

Data Model Name: DERATING_RATIO

Short Description: Ratio of the net maximum generating capacity available given the derating

Long Description: Ratio of the net maximum generating capacity representing the new maximum generating capacity as a result of the derating

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Group Derating

Sheet Description

Derating data reflects that the total installed capacity of a unit is not always available for market optimization. Potential causes include:

- Generators providing system service reserve. If you specify a value here, do not include this in the Reserve Requirements sheet.
- Generators whose output power is limited by e.g., transmission constraints, cooling constraints, others.
- Generators using inferior quality fuel.

The default derating value is 100%, which is equal to a reduction value of 0%. TSOs should provide hourly values possibly for the entire year. In case of constant curves, please provide only the first hourly value.

The modelling of derating introduced here is independent of the forced outage modelling method also called derating. The reduction of Net Generating Capacity (NGC) introduced with this parameter is independent of the forced outage and maintenance modelling in the studies: units can still be considered unavailable in the model because of maintenance and forced outage regardless of any defined derating.

Providing data sets related to derating follows the same logic as for must-run. The two specific sheets collect the derating curves related to unit groups and individual generating units.

Data collected in the Group Derating sheet

To model generation constraining effects, like fuel availability and quality, inner transmission constraints, heat/cold waves etc. time-dependent derating factors can be provided for each unit group that was defined on the Thermal sheet.

The Group Derating worksheet contains the hourly ratio curves, which can be assigned to unit groups. The data provider should fill a separate column for each different hourly curve (8760 values). In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs in this sheet and in the generation unit based "Group-based derating curve ID" column in the new Thermal sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Group-based derating curve ID" column in the Thermal sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

The defined curves can be referenced by more unit groups. In this case these groups will still be modelled independently, but the derating ratio values will be the same for all of them.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The effective net generating capacity of a group of units with defined group derating curve is the sum of the original net generating capacity of the units in the group multiplied by the derating ratio value of the given hour in the simulation. If some of the units in the group are unavailable (maintenance or forced outage), the remaining units only suffer the reduction that would remain if the original reduction would have been allocated to the outage unit(s).

Example: If one of two units (each 1000 MW) in a derating group is on forced outage in the hour where summed max. output is 0.8, the outage comes on top and the output in the derated group is only 0.5, equalling 1000 MW.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Reason derating (DERATING_REASON)

Model Builder Name: DERATING_REASON

Data Model Name: DERATING_REASON

Short Description: Reason why the derating curve is in place

Long Description: Reason why the derating curve is in place

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Derating ratio (DERATING_RATIO)

Model Builder Name: DERATING_RATIO

Data Model Name: DERATING_RATIO

Short Description: Ratio of the net maximum generating capacity available given the derating

Long Description: Ratio of the net maximum generating capacity representing the new maximum generating capacity as a result of the derating

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Reserves Requirements

Sheet Description

Reserve data will be gathered for each market zone. In this worksheet, the operational reserves requirements should be provided while avoiding risk of double-counting.

In the Reserve Requirements sheet you are asked to provide information related to reserve requirements and information useful to decide how to model it.

Note: the aggregated FCR and FRR thermal requirement submitted by TSO LACs as additional to the unit-by-unit derating (already provided in Thermal sheet), will be accounted in ERAA through a central approach defined by the ERAA MST team. This proposal will be based on derating the capacity of the units of each fuel type proportionally to the fuel type share of the total installed thermal capacity. The derating will not affect any must-run requirements.

To reduce the risk of further iteration linked to the need of clarification on how to model reserve requirements, we also ask a recommendation of how reserves requirements should be modelled in case of simulation of Day Ahead market. This clarification is particularly important for hydro dominated country:

- Additional load - this option could be preferred in case there are concern related to the availability of Reserves due to energy constraints (e.g. if reserve is provided mainly by hydro and you want to be sure to "keep enough water in the reservoir").
- Reduction of turbining capacity - if the constraint is more represented more accurately by generating capacity than by water availability (also in order to reduce the impact on marginal price of DA) it is better you impose a constraint to hydro generating output.

Frequency Containment Reserves (FCR)

FCR comprises of operational reserves which are activated to contain system frequency after an incident inside a pre-defined band. FCR are based on the automated, decentralised response of the governor controls on individual generators with a full activation time of 10-30 seconds. Please divide FCR requirements in:

- FCR that need to be made available by thermal. From a modelling perspective, this information would allow to constrain unit commitment to ensure (together with information provided in the "FCR capacity ratio" column of the Thermal sheet) that these requirements will be respected. Please provide as free text if some thermal units cannot provide FCR
- FCR that will be procured by Hydro
- FCR available from Demand (reduction of demand possible thanks to specific contract to cope with system imbalances; while DSR would work on the DA & ID, here only interruptible contract activated to contain system frequency should be considered). In case of systems imbalance this part of demand will be curtailed.

Frequency Restoration Reserves (FRR)

FRR comprises of operational reserves used to restore system frequency to its nominal value and, where applicable, the power balance to the scheduled value. FRR consists of manually-instructed services (manual FRR) as well as automatically instructed services (automatic FRR). The latter are based on the centralised control of specific generating units or loads. To model FRR requirements in adequacy assessment, or in future balancing market, you are asked to specify:

- FRR that will be procured by thermal (unit commitment of thermal units able to provide FRR considers this requirements); This will be modelled in using different methods: either as "additional load" by imposing in the unit commitment the respect of these constraints for the units able to provide FRR. Please indicate in "Thermal" sheet if some unit cannot provide FRR
- FRR that will be procured by Hydro

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates

the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Balancing reserves service (BALANCING_RESERVES_SERVICE)

Model Builder Name: BALANCING_RESERVES_SERVICE

Data Model Name: BALANCING_RESERVES_SERVICE

Short Description: The service type of balancing reserves to which the provided capacities apply to

Long Description: The service type of balancing reserves to which the provided capacities apply to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Balancing reserves technology (BALANCING_RESERVES_TECHNOLOGY)

Model Builder Name: BALANCING_RESERVES_TECHNOLOGY

Data Model Name: BALANCING_RESERVES_TECHNOLOGY

Short Description: The technology of balancing reserves service to which the provided capacities apply to

Long Description: The technology of balancing reserves service to which the provided capacities apply to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Balancing reserves capacity (BALANCING_RESERVES_CAPACITY)

Model Builder Name: BALANCING_RESERVES_CAPACITY

Data Model Name: BALANCING_RESERVES_CAPACITY

Short Description: The capacity of the selected type of balancing reserves

Long Description: The capacity of the selected type of balancing reserves

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Planned Outages

Sheet Description

This worksheet contains the exact dates of planned outages Ã¢Â□Â□ it can serve both short term and more long-term studies. For each generating unit to be considered, represented the generating unit name from the Thermal sheet, several planned outage windows can be specified. The format of the date should be dd/mm/yyyy in a text cell format.

For each planned outage, the ratio of capacity on outage can be provided. A ratio of 1 mean that all the capacity is on maintenance. If the cell is left empty, it will be a ratio of 1 will assumed.

"Reason planned outage" can be selected for further explanation.

It is possible to set entire maintenance profiles by reporting each individual outage using as many rows as necessary. It is also possible to report outages of some units only, meaning a partial maintenance profile of the generation fleet.

Planned outage refers to the scheduled maintenance that power plants need to undergo periodically.

The planned outage for each power plant can be scheduled in 3 ways:

1. Maintenance schedule in Planned Outage sheet
2. Exclusion period for maintenance optimisation in Thermal sheet
3. If no data is provided in Thermal and Planned Outages, planned outages will be entirely optimised centrally

In the Thermal sheet there are two optional parameters called:

- Maintenance optimization exclusion period Ã¢Â□Â□ start year
- Maintenance optimization exclusion period Ã¢Â□Â□ end year

This information is used to exclude certain thermal units from endogenous maintenance calculations. Maintenance will not be calculated through an optimization process for that

thermal unit from year "Maintenance optimization exclusion period Ã¢ÂÂ start year" until "Maintenance optimization exclusion period Ã¢ÂÂ end year", both inclusive. It is expected that a maintenance profile is provided in the Planned Outages sheet for the period in which the thermal unit is excluded from endogenous maintenance calculations.

If no maintenance profile is provided in the Planned Outages sheet for the period in which the thermal unit is excluded from endogenous maintenance calculations, such unit will not be assigned with any maintenance profile within that period. The maintenance schedule in the Planned Outages sheet has the highest hierarchy and such profiles will be taken into account for the corresponding target years, regardless if the target years are included or not in the "Maintenance optimization exclusion period".

Generating unit name (UNIT_NAME)

Model Builder Name: UNIT_NAME

Data Model Name: PO_GEN_UNIT_NAME

Short Description: Generating unit name of the generating unit to which the planned outage applies to

Long Description: Generating unit name of the generating unit to which the planned outage applies to The name has to match the generating unit name recorded in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Optional

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Planned outage start date (POUT_START_DATE)

Model Builder Name: POUT_START_DATE

Data Model Name: EXACT_START_DATE

Short Description: Exact start date of the planned outage period

Long Description: Exact start date of the planned outage period after which the generating unit is temporarily unavailable

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Date (start)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Optional

Planned outage start hour (POUT_START_HOUR)

Model Builder Name: POUT_START_HOUR

Data Model Name: EXACT_START_HOUR

Short Description: Exact start hour of the planned outage period

Long Description: Exact start hour of the planned outage period

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Time (start)
Unit	hh:mm (UTC)
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Not used
Seasonal Outlook	Optional

Planned outage end date (POUT_END_DATE)

Model Builder Name: POUT_END_DATE

Data Model Name: EXACT_END_DATE

Short Description: Exact end date of the planned outage period

Long Description: Exact end date of the planned outage period after which the generating unit is available again for operation

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Date (end)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Optional

Planned outage end hour (POUT_END_HOUR)

Model Builder Name: POUT_END_HOUR

Data Model Name: EXACT_END_HOUR

Short Description: Exact end hour of the planned outage period

Long Description: Exact end hour of the planned outage period

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Time (end)
Unit	hh:mm (UTC)
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Not used
Seasonal Outlook	Optional

Capacity outage ratio (POUT_RATIO)

Model Builder Name: POUT_RATIO

Data Model Name: CAPACITY_ON_OUTAGE_RATIO

Short Description: Ratio of the maximum generating capacity that is unavailable

Long Description: Ratio of the maximum generating capacity that is unavailable due to the planned outage The ratio is equal to 1 0 when the complete generating unit is unavailable

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Optional

Reason planned outage (POUT_REASON)

Model Builder Name: POUT_REASON

Data Model Name: REASON_OF_OUTAGE

Short Description: Reason why the generating unit has a planned outage

Long Description: Reason why the generating unit has a planned outage

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Expansion Constraints

Sheet Description

This table represents the maximum quantity of capacity that could be built in each future year for each fuel/technology type, given the unique set of constraints associated with each region (PECD zone) and with the development of each fuel/technology type. These constraints should be provided only when legally binding or with very strong policy backing.

A source/reference for the constraint must be provided.

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ALL

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Study target year (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR_EXPANSION_CONSTRAINTS

Short Description: Study target year to which this data applies

Long Description: Study target year to which this data applies. Drop-down options show only target years of the study

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Expansion technology (EXPANSION_CONSTRAINTS_TECHNOLOGY)

Model Builder Name: EXPANSION_CONSTRAINTS_TECHNOLOGY

Data Model Name: EXPANSION_CONSTRAINTS_TECHNOLOGY

Short Description: Technology type to which the expansion constraint applies

Long Description: Technology type to which the expansion constraint applies

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Max expansion capacity (EXPANSION_CONSTRAINTS_MAX_CAPACITY)

Model Builder Name: EXPANSION_CONSTRAINTS_MAX_CAPACITY

Data Model Name: EXPANSION_CONSTRAINTS_MAX_CAPACITY

Short Description: Max capacity of expansion for the technology and year selected

Long Description: Max capacity of expansion for the technology and year selected The value is additional not cumulative (e g 200 MW Gas in 2030 and 200 MW Gas in 2031 =

400 MW additional capacity in 2031)

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Min expansion capacity (EXPANSION_CONSTRAINTS_MIN_CAPACITY)

Model Builder Name: EXPANSION_CONSTRAINTS_MIN_CAPACITY

Data Model Name: EXPANSION_CONSTRAINTS_MIN_CAPACITY

Short Description: Min capacity of expansion for the technology and year selected

Long Description: Min capacity of expansion for the technology and year selected The value is additional not cumulative (e g 200 MW Gas in 2030 and 200 MW Gas in 2031 = 400 MW additional capacity in 2031)

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Reason expansion constraint (EXPANSION_CONSTRAINTS_REASON)

Model Builder Name: EXPANSION_CONSTRAINTS_REASON

Data Model Name: EXPANSION_CONSTRAINTS_REASON

Short Description: Source (or legal document) citing explicit limits for the expansion constraint

Long Description: Source (or legal document) citing explicit limits for the expansion constraint

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Fixed OM costs (FIXED_OM_COSTS)

Model Builder Name: FIXED_OM_COSTS

Data Model Name: GU_FIX_OM_COSTS

Short Description: Operations and maintenance annual fixed charge

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc The info is aimed to be use for consistency checks and common data validation and it is not directly applied in the model

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	EUR/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

CAPEX (CAPEX)

Model Builder Name: CAPEX

Data Model Name: GU_CAPEX

Short Description: One-off capital expenditures of the asset

Long Description: One-off capital expenditures of the generating unit

This information is aimed to be use for consistency checks and common data validation although models will use common data values for modeling (not these individual values).

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	99999999.0
Type	Float
Unit	EUR/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

DSR Type (DSR_TYPE)

Model Builder Name: DSR_TYPE

Data Model Name: DSR_TYPE_EXPANSION_CONSTRAINTS

Short Description: Type of explicit DSR: demand shedding or demand shifting

Long Description: The DSR type describe how the DSR band shall be accounted in modelling Demand shedding is explict DSR that reduces its consumption above the activation price without recovery Demand shift is explicit DSR that shift its load upon recovery within a time window prescribed by DSR Shift Recovery Time

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Not used

DSR DA activation price (EXPANSION_CONSTRAINTS_ACTIVATION_PRICE)

Model Builder Name: EXPANSION_CONSTRAINTS_ACTIVATION_PRICE

Data Model Name: EXPANSION_CONSTRAINTS_ACTIVATION_PRICE

Short Description: DSR ONLY / Activation price for the specific DSR expansion object

Long Description: DSR ONLY / Activation price for the specific DSR expansion object

Attributes

Attribute	Value
Minimum value	-9999.0
Maximum value	9999.0
Type	Float
Unit	EUR/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Max hours per day (EXPANSION_CONSTRAINTS_MAX_DAILY_HOURS)

Model Builder Name: EXPANSION_CONSTRAINTS_MAX_DAILY_HOURS

Data Model Name: EXPANSION_CONSTRAINTS_MAX_DAILY_HOURS

Short Description: DSR ONLY / Maximum hours of activation in a day

Long Description: DSR ONLY / Maximum hours of activation in a day

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	24.0
Type	Integer
Unit	hours
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

DSR Shift recovery window (DSR_SHIFT_RECOVERY_WINDOW)

Model Builder Name: DSR_SHIFT_RECOVERY_WINDOW

Data Model Name: DSR_SHIFT_RECOVERY_WINDOW

Short Description: Number of hours in which the demand (energy) need to be recovered (min 1 h - max 168 h)

Long Description: Number of hours in which the demand (energy) need to be recovered (min 1 h - max 168 h) Please note that time window is fixed starting from midnight (first day of the week) to avoid for unrealistic 'rolling' demand shifting

Attributes

Attribute	Value
Minimum value	2.0
Maximum value	168.0
Type	Integer
Unit	hours
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Not used

Energy power ratio (EXPANSION_CONSTRAINTS_ENERGY_POWER_RATIO)

Model Builder Name: EXPANSION_CONSTRAINTS_ENERGY_POWER_RATIO

Data Model Name: EXPANSION_CONSTRAINTS_ENERGY_POWER_RATIO

Short Description: BATTERY ONLY / Energy to power ratio for the installed battery

Long Description: BATTERY ONLY / Energy to power ratio for the installed battery

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999.0
Type	Float
Unit	MWh/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Not used
Seasonal Outlook	Conditional

Min-Max Unit Maintenance

Sheet Description

This worksheet contains the weekly maximum and minimum number of units on maintenance for each defined group (defined with a group name in the Thermal sheet). The group name should be specified in the "Curve ID" row.

The sheet also includes validity start and end year cells, to specify an interval of years, where the weekly curve should be considered. The defined starting and end year is included in the validity interval. The same group name can be associated with different columns in case the validity years are not overlapping. It can be used to reflect an evolution of the weekly curve.

Maximum and minimum curves go in pairs for each group.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Min units maintenance (MIN_NO_UNITS)

Model Builder Name: MIN_NO_UNITS

Data Model Name: UNIT_MAINTENANCE_MIN_NUMBER_OF_UNIT

Short Description: Minimum number of units undergoing maintenance

Long Description: Minimum number of units undergoing maintenance in the referenced period

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	9999.0
Type	Integer
Unit	units
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Max units maintenance (MAX_NO_UNITS)

Model Builder Name: MAX_NO_UNITS

Data Model Name: UNIT_MAINTENANCE_MAX_NUMBER_OF_UNIT

Short Description: Maximum number of units undergoing maintenance

Long Description: Maximum number of units undergoing maintenance in the referenced period

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	9999.0
Type	Integer
Unit	units
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Renewables

Renewables data should be provided on a Plant-by-Plant basis rather than unit-by-unit. This approach ensures a more accurate representation of renewable energy contributions and facilitates better data management.

The most important points to consider are:

- Hydro data are now categorized separately . This change allows for a more focused analysis of hydroelectric resources and their impact on overall renewable energy generation.
- For ERAA and TYNDP, rooftop PV is explicitly modeled in the simulation. Therefore, values for rooftop PV must NOT be included in the DFT (Data Flow Template) and MUST be provided in the PEMMDB (Plant Energy Model Metadata Database) as installed capacity. This distinction is crucial for accurate modeling and reporting.
- For all plants (except Wind and Solar types) reported in the Renewables sheet, a Curve ID must be defined. Additionally, a corresponding curve (i.e., timeseries data) must be provided in the Other RES hourly sheet. Different plants can be linked to the same timeseries by providing the respective Curve ID for each plant, which enhances data consistency and usability.
- The geographic location of plants is mandatory at the PECD (Plant Energy Capacity Data) zone level. This requirement is essential for establishing the correct link between PECD capacity factors and installed capacity, ensuring that data reflects regional energy production capabilities accurately.
- Hydro reservoirs are treated as separate entities in the Hydro Reservoirs sheet. The connection between reservoirs and plants is established by specifying the reservoir name that the plant is associated with in the hydro sheet. In the modeling process, all head and tail reservoir capacities will be aggregated by technology. Note that cascaded reservoirs are not being modeled, which simplifies the analysis but may overlook some complex interactions.

Renewables Sheets

- Renewables (Renewables)
- Other RES Hourly (Other RES Hourly)
- Offshore Technology (Offshore Technology)
- Onshore Technology (Onshore Technology)

Renewables

Sheet Description

Renewables and hydro data should be provided Plant-by-Plant and not unit-by-unit. For future volumes, if no details are available, data can be provided aggregated at PECD zone level.

The most important points are:

- For all units (except Wind and Solar types) reported in the Renewables sheet, a Curve ID must be defined and a timeseries provided in the Other RES hourly sheet. Many units can use the same timeseries, so there is no need for unique curves Ã¢Â⍰Â⍰ this will limit the efforts needed by Correspondents to provide the output profile of renewable plants.
- Geographic location of plants, at least defining the PECD region, is now needed. This will be extremely important for any zonal modelling approach.
- Hydro reservoirs are now collected as separate objects in the Hydro Reservoirs sheet. The link between reservoir and plants is done by using the reservoir name in the Hydro sheet.

The Renewables sheet aims to collect more granular renewable capacities:

- The resolution of the renewable power plants representation is increased to generating unit level, with the ability to create the hierarchy of generating units under groups.
- The time horizon of the renewables data collected is not tied to a single year with this format. Instead, we collect the expected commissioning and decommissioning dates available for the plants/units available now and expected to be available in the future. This means that a scenario (e.g. in TYNDP) with different time horizons will only have one Renewables data sheet that covers all study years for that scenario.
- Geographic location of plants, at least defining the PECD region, is now needed. This will be extremely important for any zonal modelling approach.

- Information regarding connectivity of plants in the Network Model, closing the gap between market and network models. As for the geographic location of plants, this will be extremely useful for any zonal modelling approach. Not defined or splitting not known RES technologies are collected in the Renewables sheet.

Indication on mandatory and optional fields can be found in the templates. Indication on default values is available in the Fields guidelines.

Generating unit name (UNIT_NAME)

Model Builder Name: UNIT_NAME

Data Model Name: GU_NAME

Short Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique

Long Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique. Linking market data to network data will primarily use the rdf:ID however unit name may be used to cross-validate the matching of units between datasets.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Generating unit rdf:ID (GEN_UNIT_RDFID)

Model Builder Name: GEN_UNIT_RDFID

Data Model Name: GU_MRID

Short Description: Unique ID for each generating unit

Long Description: The rdf:ID is the link between the network and market model The value should match with the network model that will be created in later processes Where these are stable between different CGM versions they will be extremely useful to match network and market models If rdf:IDs are not stable please indicate in last column which version of CGM the rdf:ID refers to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ALL

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which

market zone the provided data applies to.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

PECD zone (PECD_ZONE)

Model Builder Name: PECD_ZONE

Data Model Name: PECD_ZONE_ALL

Short Description: PECD zone to which this unit / data applies to

Long Description: PECD zone where the generating unit is located (selectable in the dropdown-list) This is now a mandatory field as it will directly support zonal modelling whenever needed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Latitude (LAT_DEG)

Model Builder Name: LAT_DEG

Data Model Name: GU_LATITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical latitude and longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when available. Positive lattitudes are North of the Equator. Negative lattitudes are South of the Equator

Attributes

Attribute	Value
Minimum value	26.0
Maximum value	72.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Longitude (LON_DEG)

Model Builder Name: LON_DEG

Data Model Name: GU_LONGITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when available. Positive longitudes are East of London. Negative longitudes are West of London

Attributes

Attribute	Value
Minimum value	-26.0
Maximum value	50.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Commissioning date (COMMISSIONING_DATE)

Model Builder Name: COMMISSIONING_DATE

Data Model Name: GU_COMMIS_DATE

Short Description: First day of commercial availability of the unit

Long Description: Start (commisioning) date from which the generation unit is operationally available to generate power

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	0

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Decommissioning date official (DECOMMISSIONING_DATE_OFFICIAL)

Model Builder Name: DECOMMISSIONING_DATE_OFFICIAL

Data Model Name: GU_OFF_DECOM_DATE

Short Description: Official end date after which the unit is permanently unavailable

Long Description: Official end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to an official (public) source Used in studies only if the expected date is not provided

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Decommissioning date expected (DECOMMISSIONING_DATE_EXPECTED)

Model Builder Name: DECOMMISSIONING_DATE_EXPECTED

Data Model Name: GU_EXP_DECOM_DATE

Short Description: Expected end date after which the unit is permanently unavailable

Long Description: Expected end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to TSO best knowledge at the

time of data collection Used in studies as default

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	73415

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Plant type (PEMMDB_PLANT_TYPE)

Model Builder Name: PEMMDB_PLANT_TYPE

Data Model Name: GU_PLANT_TYPE_RENEWABLES

Short Description: Technology type of the renewable generating unit

Long Description: Technology type of the renewable generating unit

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Offshore expansion type of connection (OFFSHORE_EXP_CONNECTION)

Model Builder Name: OFFSHORE_EXP_CONNECTION

Data Model Name: OFFSHORE_EXPANSION_CONNECTION_TYPE

Short Description: Indicate the type of connection the unit would have if it was to be expanded

Long Description: Indicate the type of connection the unit would have if it was to be expanded. If Market Zone = onshore home market (e.g. XX00) Connection = Radial (if expansion would be radial) or Connection = Hub Ready (if a hybrid expansion is established - indicate what offshore hub the unit would be expanded in _ 'Offshore Hub Expansion') If Market Zone = Offshore Hub Connection = Hub

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Conditional
Seasonal Outlook	Not used

Offshore hub expansion (OFFSHORE_HUB_EXP)

Model Builder Name: OFFSHORE_HUB_EXP

Data Model Name: OFFSHORE_EXPANSION_HUB

Short Description: The offshore hub in which this generating unit would reside if expanded (if Type of Connection = Hub ready)

Long Description: The offshore hub in which this generating unit would reside if expanded (if Type of Connection = Hub ready)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Conditional
Seasonal Outlook	Not used

CHP (CHP)

Model Builder Name: CHP

Data Model Name: GU_CHP_TYPE

Short Description: If the (thermal) generating unit also generates heat that is further used as a byproduct

Long Description: A True/False parameter to define whether the unit is a CHP (Combined Heat and Power) unit If the (thermal) generating unit also generates heat that is further used as a byproduct (e g to supply a heat grid or an industrial process?)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	Not CHP

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Sector location (SECTOR)

Model Builder Name: SECTOR

Data Model Name: RES_SECTOR

Short Description: For which sector this generating unit is being deployed

Long Description: For which sector this generating unit is being deployed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Mandatory
Seasonal Outlook	Optional

Net maximum generating capacity (NET_MAX_GEN_CAP)

Model Builder Name: NET_MAX_GEN_CAP

Data Model Name: GU_MAX_NET_CAPACITY

Short Description: Maximum electrical net active power available on the market

Long Description: Maximum electrical net active power that a power plant can offer to the market (maximum electrical net active power that a power plant can feed-in continuously without exceeding the designed physical limits of the unit) Any capacity potentially reserved for ancillary services (e g FCR and FRR) must NOT be subtracted from the Net Maximum Generating Capacity

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Current type capacity (CURRENT_TYPE_CAPACITY)

Model Builder Name: CURRENT_TYPE_CAPACITY

Data Model Name: CURRENT_TYPE_CAPACITY

Short Description: Whether the capacity is provided in AC or DC

Long Description: The PECD capacity factors are provided for DC capacities and thus it is important to know if renewable PEMMDB capacities are provided in either AC or DC to that the correct assumptions for losses are applied.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	DC

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Overplanting ratio (OVERPLANTING_RATIO)

Model Builder Name: OVERPLANTING_RATIO

Data Model Name: OVERPLANTING_RATIO

Short Description: Overplanting ratio defined as DC/AC

Long Description: Overplanting ratio for renewable energy technologies (i e Wind and Solar) defining the percentage of nominal capacity (NGC) of the unit/farm that cannot be exploited from the grid perspective due to overplanting issues or regulations Overplanting issues are typically referring to excessive distributed energy capacity in an area or location which saturates DSO/TSO grid connection capabilities Alternatively a designed overplanting of wind or solar technologies uses curtailment to stabilize the energy production Excess generation over the grid connection is curtailed In practice the hourly max feed-in capacity to the grid will be the minimum of [NGC] and [NGC x (overplanting ratio) x PECD hourly capacity factors] Other effects hindering the max exploitable capacity such as shadowing effects in PV farms or wake effects in wind farms should not be reflected here Overplanting ratios for beyond-the-meter capacity (e g out-of-market PV Rooftop) will not affect operation beyond the grid (e g auto-consumption and households demand forecasts)

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	1

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Solar thermal storage capacity (SOLAR_TH_CAP)

Model Builder Name: SOLAR_TH_CAP

Data Model Name: SOLAR_GU_THERMAL_STORAGE

Short Description: Storage Thermal capacity connect to solar generating units

Long Description: Storage Thermal capacity connect to solar generating units

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MWh
Default value	0

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Other RES curve ID (CURVE_ID)

Model Builder Name: CURVE_ID

Data Model Name: REN_CURVE_ID

Short Description: Unique curve/profile ID for other RES

Long Description: Unique ID number used to link the RES hourly profile to the generation unit(s) that it applies to as recorded in the Other RES Hourly sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Planned outage annual days (PLAN_OUTAGE_ANNUAL_DAYS)

Model Builder Name: PLAN_OUTAGE_ANNUAL_DAYS

Data Model Name: GU_PLAN_OUTAGE

Short Description: Number of days of planned outage

Long Description: Number of days where the unit is on planned outage on an annual basis

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	365.0
Type	Integer
Unit	days
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Planned outage annual windows (PLAN_OUTAGE_ANNUAL_WIN)

Model Builder Name: PLAN_OUTAGE_ANNUAL_WIN

Data Model Name: GU_PLAN_OUTAGE_WINDOWS

Short Description: Number of windows where the unit is on planned outage on an annual basis

Long Description: Number of windows where the unit is on planned outage on an annual basis The total number of days provided In the previous attribute will be split in a number different outages windows defined by this ⍰number of windows⍰ attribute

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	50.0
Type	Integer
Unit	windows
Default value	1

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Planned outage min duration (PLAN_OUTAGE_MIN_HRS_PWIN)

Model Builder Name: PLAN_OUTAGE_MIN_HRS_PWIN

Data Model Name: GU_PLAN_OUTAGE_MIN_HOUR_WINDOWS

Short Description: Minimum number of hours per planned outage window

Long Description: Minimum number of hours per planned outage window where the unit is on planned outage on an annual basis

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Integer
Unit	hours/window
Default value	24

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Planned outage min winter period (PLAN_OUTAGE_WINTER)

Model Builder Name: PLAN_OUTAGE_WINTER

Data Model Name: GU_PLAN_OUTAGE_WINTER_RATIO

Short Description: Lower bound of the outage period that should occur in winter Zero values are taken into account

Long Description: Lower bound of the outage period that should occur in winter Winter is defined here as 6 months from October to March inclusive with summer being defined as 6 months from April to September inclusive Leaving the field empty means no target value will be taken into account for maintenance optimization and the resulting value may vary between 0% and 100% It may happen that optimisation will allocate more days of outage in winter periods than the provided value as this is treated as a lower bound

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Maintenance restriction start date (MAIN_RESTRICT_START_DATE)

Model Builder Name: MAIN_RESTRICT_START_DATE

Data Model Name: GU_MAINT_RESTRIC_START

Short Description: Starting date of the maintenance restriction interval valid for calendar year 2018 (=2007)

Long Description: Starting date (month and day) of an interval when the unit shouldn□t be on planned maintenance Dates shall be valid for calendar year 2018 (=2007)

Attributes

Attribute	Value
Minimum value	2018.0
Maximum value	2018.0
Type	Date (start)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Maintenance restriction end date (MAIN_RESTRICT_END_DATE)

Model Builder Name: MAIN_RESTRICT_END_DATE

Data Model Name: GU_MAINT_RESTRIC_END

Short Description: Ending date of the maintenance restriction interval valid for calendar year 2018 (=2007)

Long Description: End date (month and day) of an interval when the unit shouldn⍰t be on planned maintenance Dates shall be valid for calendar year 2018 (=2007)

Attributes

Attribute	Value
Minimum value	2018.0
Maximum value	2018.0
Type	Date (end)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Variable OM costs (VAR_OM_COST)

Model Builder Name: VAR_OM_COST

Data Model Name: GU_ECO_VAR_COSTS

Short Description: Non-fuel operations and maintenance cost

Long Description: Non-fuel operations and maintenance cost that includes cost of consumable materials (ammonia limestone water etc) production by products handling (ash slug etc) and maintenance that may be scheduled based on the number of operating hours or start-stop cycles of the plant The info is aimed to be use for consistency checks and common data validation; and it is not directly applied in the model

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	9999999.0
Type	Float
Unit	EUR/MWh
Default value	Common data

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Fixed OM costs (FIXED_OM_COSTS)

Model Builder Name: FIXED_OM_COSTS

Data Model Name: GU_FIX_OM_COSTS

Short Description: Operations and maintenance annual fixed charge

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc The info is aimed to be use for consistency checks and common data validation and it is not directly applied in the model

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	EUR/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

CAPEX (CAPEX)

Model Builder Name: CAPEX

Data Model Name: GU_CAPEX

Short Description: One-off capital expenditures of the asset

Long Description: One-off capital expenditures of the generating unit

This information is aimed to be use for consistency checks and common data validation although models will use common data values for modeling (not these individual values).

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	99999999.0
Type	Float
Unit	EUR/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Output constraints (OP_CONSTRAINT)

Model Builder Name: OP_CONSTRAINT

Data Model Name: GU_OUT_CONSTRAINTS

Short Description: Maximum annual generation constraint

Long Description: Maximum annual generation constraint when relevant for any technical or legal reason

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	GWh/year
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Annual operating time limit (ANNUAL_OP_TIME_LIMIT)

Model Builder Name: ANNUAL_OP_TIME_LIMIT

Data Model Name: GU_ANNUAL_OP_TIME_LIMIT

Short Description: Operating time limit

Long Description: Maximum hours per year that the generating unit can operate (max 8760) when relevant for any technical or legal reason

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Integer
Unit	hours/year
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Other RES Hourly

Sheet Description

The Other-RES hourly worksheet contains the hourly ratio curves, which can be assigned to individual units. The data provider should fill a separate column for each different hourly curve (8760 values). In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs in this sheet and in the generation unit based "Curve ID" column in the Renewables sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Curve ID" column in the Renewables sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

The defined curves can be referenced by more generating units.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The effective net output of a unit with defined hourly curve is its original net generating capacity multiplied by the ratio value of the given hour in the simulation.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Hourly ratios (HOURLY_RATIO)

Model Builder Name: HOURLY_RATIO

Data Model Name: HOURLY_RATIO

Short Description: Ratio of the net maximum generating capacity available given the derating

Long Description: Ratio of the net maximum generating capacity representing the new maximum generating capacity as a result of the derating

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Offshore Technology

Sheet Description

These sheets show the evolution of different onshore and offshore technologies over the coming years for each PECD zone. The values are ratios and the sum of values for each year should be equal to 1.

These sheets are pre-filled with assumed values. These can be retained or updated.

Ratios refer to the mix of capacity increment over that year. More precisely, it is a mix over the previous year (i.e. 2021 capacity mix is valid for all wind additions from 1 January 2020 until 31 December 2020).

Example Ratio (provided by TSOs):

TECH/YEAR	2020
EXISTING	1
A	0
B	0

Example Capacities:

TECH/YEAR	2020
TOTAL CAPACTITY (PROVIDED BY TSO)	10
EXISTING CAPACITY (COMPUTED BY ENTSO-E)	10
A CAPACITY (COMPUTED BY ENTSO-E)	0
B CAPACITY (COMPUTED BY ENTSO-E)	0

Using these capacities of individual technologies PECD files are created Ã¢ÂÂ a single file for onshore wind and a single file for offshore.

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD zone (PECD_ZONE)

Model Builder Name: PECD_ZONE

Data Model Name: PECD_ZONE_OFFSHORE_INDEPENDENT

Short Description: PECD zone to which this unit / data applies to

Long Description: PECD zone where the generating unit is located (selectable in the dropdown-list) This is now a mandatory field as it will directly support zonal modelling whenever needed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Offshore technology (OFFSHORE_TECHNOLOGY_TYPE)

Model Builder Name: OFFSHORE_TECHNOLOGY_TYPE

Data Model Name: TECHNOLOGY_EVOLUTION_TECHNOLOGY_OFFSHORE

Short Description: Technology type for this ratio of offshore wind generation

Long Description: Technology type for this ratio of offshore wind generation

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Technology mix (OFFSHORE_TECHNOLOGY_RATIO)

Model Builder Name: OFFSHORE_TECHNOLOGY_RATIO

Data Model Name:
TECHNOLOGY_EVOLUTION_TECHNOLOGY_DEVELOPMENT_OFFSHORE

Short Description: Ratio of total generation capacity based on this technology type

Long Description: Ratio of total generation capacity based on this technology type

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Onshore Technology

Sheet Description

These sheets show the evolution of different onshore and offshore technologies over the coming years for each PECD zone. The values are ratios and the sum of values for each year should be equal to 1.

These sheets are pre-filled with assumed values. These can be retained or updated.

Ratios refer to the mix of capacity increment over that year. More precisely, it is a mix over the previous year (i.e. 2021 capacity mix is valid for all wind additions from 1 January 2020 until 31 December 2020).

Example Ratio (provided by TSOs):

TECH/YEAR	2020
EXISTING	1
A	0
B	0

Example Capacities:

TECH/YEAR	2020
TOTAL CAPACTITY (PROVIDED BY TSO)	10
EXISTING CAPACITY (COMPUTED BY ENTSO-E)	10
A CAPACITY (COMPUTED BY ENTSO-E)	0
B CAPACITY (COMPUTED BY ENTSO-E)	0

Using these capacities of individual technologies PECD files are created Ã¢Â⍰Â⍰ a single file for onshore wind and a single file for offshore.

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD zone (PECD_ZONE)

Model Builder Name: PECD_ZONE

Data Model Name: PECD_ZONE_ONSHORE_INDEPENDENT

Short Description: PECD zone to which this unit / data applies to

Long Description: PECD zone where the generating unit is located (selectable in the dropdown-list) This is now a mandatory field as it will directly support zonal modelling whenever needed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Onshore technology (ONSHORE_TECHNOLOGY_TYPE)

Model Builder Name: ONSHORE_TECHNOLOGY_TYPE

Data Model Name: TECHNOLOGY_EVOLUTION_TECHNOLOGY_ONSHORE

Short Description: Technology type for this ratio of onshore wind generation

Long Description: Technology type for this ratio of onshore wind generation

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Technology mix (ONSHORE_TECHNOLOGY_RATIO)

Model Builder Name: ONSHORE_TECHNOLOGY_RATIO

Data Model Name:
TECHNOLOGY_EVOLUTION_TECHNOLOGY_DEVELOPMENT_ONSHORE

Short Description: Ratio of total generation capacity based on this technology type

Long Description: Ratio of total generation capacity based on this technology type

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Hydro Technology

Hydro data has now its own category and should also be provided Plant-by-Plant and not unit-by-unit as in the past.

The category includes the constraints for all hydro technologies.

Hydro Technology Sheets

- Hydro Power Plants (Hydro)
- Hydro Reservoirs (Hydro Reservoirs)
- Reservoir Levels (Reservoir Levels)
- Reservoir Constraints (Reservoir Constraints)
- Pump-Storage in closed loop Constraints (PS Closed Constraints)
- Pump-Storage in open loop Constraints (PS Open Constraints)
- Run of River Constraints (Run of River Constraints)
- Pondage Constraints (Pondage Constraints)

Hydro

Sheet Description

The Hydro sheet aims to collect more granular hydro capacities. The resolution of the hydro power plants representation is increased to generating unit level, with the ability to create the hierarchy of generating units under groups (river cascades).

Indication on mandatory and optional fields can be found in the templates. Indication on default values is available in the Fields guidelines.

Generating unit name (UNIT_NAME)

Model Builder Name: UNIT_NAME

Data Model Name: GU_NAME

Short Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique

Long Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique. Linking market data to network data will primarily use the rdf:ID however unit name may be used to cross-validate the matching of units between datasets.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

River cascade name (CASCADE_NAME)

Model Builder Name: CASCADE_NAME

Data Model Name: HYDRO_CASCADE_NAME

Short Description: River cascade name to identify the hydro units belonging to the cascade

Long Description: River cascade name to identify the hydro units belonging to the cascade To identify hydro units which generation is not independent from each other the

same River cascade name should be recorded for all units in the river cascade

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Downstream generating units (DOWNSTREAM_UNIT_NAME)

Model Builder Name: DOWNSTREAM_UNIT_NAME

Data Model Name: HYDRO_DOWNSTREAM_GU

Short Description: Hydro units downstream the river separated by commas

Long Description: Hydro units downstream the river separated by commas

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Generating unit rdf:ID (GEN_UNIT_RDFID)

Model Builder Name: GEN_UNIT_RDFID

Data Model Name: GU_MRID

Short Description: Unique ID for each generating unit

Long Description: The rdf:ID is the link between the network and market model The value should match with the network model that will be created in later processes Where these are stable between different CGM versions they will be extremely useful to match network and market models If rdf:IDs are not stable please indicate in last column which version of CGM the rdf:ID refers to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

PECD zone (PECD_ZONE)

Model Builder Name: PECD_ZONE

Data Model Name: PECD_ZONE_ONSHORE

Short Description: PECD zone to which this unit / data applies to

Long Description: PECD zone where the generating unit is located (selectable in the dropdown-list) This is now a mandatory field as it will directly support zonal modelling whenever needed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Latitude (LAT_DEG)

Model Builder Name: LAT_DEG

Data Model Name: GU_LATITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical latitude and longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when available. Positive lattitudes are North of the Equator. Negative lattitudes are South of the Equator

Attributes

Attribute	Value
Minimum value	26.0
Maximum value	72.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Longitude (LON_DEG)

Model Builder Name: LON_DEG

Data Model Name: GU_LONGITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when

available. Positive longitudes are East of London. Negative longitudes are West of London

Attributes

Attribute	Value
Minimum value	-26.0
Maximum value	50.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Commissioning date (COMMISSIONING_DATE)

Model Builder Name: COMMISSIONING_DATE

Data Model Name: GU_COMMIS_DATE

Short Description: First day of commercial availability of the unit

Long Description: Start (commisioning) date from which the generation unit is operationally available to generate power

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	0

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Decommissioning date official (DECOMMISSIONING_DATE_OFFICIAL)

Model Builder Name: DECOMMISSIONING_DATE_OFFICIAL

Data Model Name: GU_OFF_DECOM_DATE

Short Description: Official end date after which the unit is permanently unavailable

Long Description: Official end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to an official (public) source Used in studies only if the expected date is not provided

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Decommissioning date expected (DECOMMISSIONING_DATE_EXPECTED)

Model Builder Name: DECOMMISSIONING_DATE_EXPECTED

Data Model Name: GU_EXP_DECOM_DATE

Short Description: Expected end date after which the unit is permanently unavailable

Long Description: Expected end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to TSO best knowledge at the time of data collection Used in studies as default

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	73415

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Plant type (PEMMDB_PLANT_TYPE)

Model Builder Name: PEMMDB_PLANT_TYPE

Data Model Name: GU_PLANT_TYPE_HYDRO

Short Description: Technology type of the hydro unit

Long Description: Technology type of the hydro unit

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Net maximum generating capacity (NET_MAX_GEN_CAP)

Model Builder Name: NET_MAX_GEN_CAP

Data Model Name: GU_MAX_NET_CAPACITY

Short Description: Maximum electrical net active power available on the market

Long Description: Maximum electrical net active power that a power plant can offer to the market (maximum electrical net active power that a power plant can feed-in continuously without exceeding the designed physical limits of the unit) Any capacity potentially reserved for ancillary services (e g FCR and FRR) must NOT be subtracted from the Net Maximum Generating Capacity

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Net minimum stable generation (NET_MIN_STAB_GEN)

Model Builder Name: NET_MIN_STAB_GEN

Data Model Name: GU_MIN_STABLE_CAPACITY

Short Description: Minimum active power at which the generating module can be operated stably for an unlimited time should be lower than net maximum generating capacity (NET_MAX_GEN_CAP)

Long Description: Minimum active power as specified in the connection agreement or as agreed between the relevant system operator and the power generating facility owner at which the power generating module can be operated stably for an unlimited time should be lower than net maximum generating capacity (NET_MAX_GEN_CAP)

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Net maximum pumping power (NET_MAX_PUMPING_CAP)

Model Builder Name: NET_MAX_PUMPING_CAP

Data Model Name: HYDRO_MAX_PUMP_POWER

Short Description: Maximum electrical net active power the hydro unit consumes for pumping

Long Description: Maximum electrical net active power a power plant can offer to the market (maximum electrical net active power a power plant can feed-in continuously without exceeding the designed physical limits of the unit) Should be already net with regards to primary reserve (FCR) and may be subject to derating defined in other optional parameters

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Net minimum pumping power (NET_MIN_PUMPING_CAP)

Model Builder Name: NET_MIN_PUMPING_CAP

Data Model Name: HYDRO_MIN_PUMP_POWER

Short Description: Minimum electrical net active power the hydro unit consumes for pumping

Long Description: Minimun electrical net active power a power plant can offer to the market (minimum electrical net active power a power plant can feed-in continuously without exceeding the designed physical limits of the unit) Should be already net with regards to primary reserve (FCR) and may be subject to derating defined in other optional parameters

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Head Reservoir name (HEAD_RES_NAME)

Model Builder Name: HEAD_RES_NAME

Data Model Name: HYDRO_UPPER_RESERVOIR_NAME

Short Description: Head Reservoir name as recorded when defining the Reservoir unit

Long Description: Head Reservoir name as recorded when defining the Reservoir unit

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Tail Reservoir name (TAIL_RES_NAME)

Model Builder Name: TAIL_RES_NAME

Data Model Name: HYDRO_TAILWATER_RESERVOIR

Short Description: Tail Reservoir name as recorded when defining the Reservoir unit

Long Description: Tail Reservoir name as recorded when defining the Reservoir unit

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Ramp up (RAMP_UP)

Model Builder Name: RAMP_UP

Data Model Name: GU_RAMP_UP

Short Description: Net increase in power output

Long Description: Net increase in power output that the generating unit can obtain in a given period of time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW/min
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

m3/s generating (GEN_FLOW)

Model Builder Name: GEN_FLOW

Data Model Name: HYDRO_VOL_GEN

Short Description: Flow rate of the hydro generating unit

Long Description: Flow rate as the volume of water that flows through a hydroelectric power plant per unit time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	m3/s
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Ramp down (RAMP_DOWN)

Model Builder Name: RAMP_DOWN

Data Model Name: GU_RAMP_DOWN

Short Description: Net decrease in power output

Long Description: Net decrease in power output that the generating unit can obtain in a given period of time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW/min
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

m3/s pumping flow (PUMP_FLOW)

Model Builder Name: PUMP_FLOW

Data Model Name: HYDRO_VOL_PUMP

Short Description: Pumping flow rate of the hydro generating unit

Long Description: Flow rate as the volume of water that is pumped by a hydroelectric power plant per unit time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	m3/s
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Rated capacity (RATED_CAPACITY_HREF)

Model Builder Name: RATED_CAPACITY_HREF

Data Model Name: GU_RATED_CAPACITY

Short Description: Nominal capacity of the generating unit

Long Description: Installed nominal capacity of the generating unit

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MVA
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Head (HEAD)

Model Builder Name: HEAD

Data Model Name: HYDRO_HEAD

Short Description: Vertical change in elevation between the head (Reservoir) water level and the tailwater (downstream) level

Long Description: Vertical change in elevation between the head (Reservoir) water level and the tailwater (downstream) level

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	10000.0
Type	Float
Unit	m
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

EVA exclusion reason (EVA_NT_REASON)

Model Builder Name: EVA_NT_REASON

Data Model Name: GU_EVA_REASON_NOT_SUBJECT_BATTERIES_HYDRO

Short Description: Selectable if not subject to EVA

Long Description: Reason that justifies capacity exclusion from EVA. To be specified only if the generating unit is not subject to EVA. There are several options: 1- Unit has an awarded capacity mechanism contract (CM contract). 2- Unit receives revenue from another source excluding CM heat/steam/waste or government policy (Other non-policy revenues) 3- Technology is formally excluded from EVA e.g. nuclear (Excluded tech) 4 - Existing unit is driven by a certain policy (Policy Certain (existing)) 5 - Expected new-build capacity is driven by a certain policy (Policy Certain (new)) 6 - Expected new-build capacity is driven by either an uncertain policy or a certain policy with high deployment risk (Policy Uncertain)). Some categories not applicable for all technologies.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

Hydro Reservoirs

Sheet Description

The Hydro reservoir sheet aims to collect more granular reservoir capacity data. Hydro reservoir units listed in the Hydro reservoir sheet shall be properly referenced in the "Head reservoir name" and "Tail reservoir name" columns in the Hydro sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Head reservoir name" and "Tail reservoir name" columns in the Hydro sheet.

Reservoir name (UNIT_NAME)

Model Builder Name: UNIT_NAME

Data Model Name: RESERVOIR_NAME

Short Description: Unit names should be unique for each defined row

Long Description: Unit names should be unique for each defined row and should be consistent when referencing the unit

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Mandatory
Seasonal Outlook	Not used

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which

market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

PECD zone (PECD_ZONE)

Model Builder Name: PECD_ZONE

Data Model Name: PECD_ZONE_ONSHORE

Short Description: PECD zone to which this unit / data applies to

Long Description: PECD zone where the generating unit is located (selectable in the dropdown-list) This is now a mandatory field as it will directly support zonal modelling whenever needed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Commissioning date (COMMISSIONING_DATE)

Model Builder Name: COMMISSIONING_DATE

Data Model Name: GU_COMMIS_DATE

Short Description: First day of commercial availability of the unit

Long Description: Start (commisioning) date from which the generation unit is operationally available to generate power

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	0

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Decommissioning date official (DECOMMISSIONING_DATE_OFFICIAL)

Model Builder Name: DECOMMISSIONING_DATE_OFFICIAL

Data Model Name: GU_OFF_DECOM_DATE

Short Description: Official end date after which the unit is permanently unavailable

Long Description: Official end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to an official (public) source Used in studies only if the expected date is not provided

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Decommissioning date expected (DECOMMISSIONING_DATE_EXPECTED)

Model Builder Name: DECOMMISSIONING_DATE_EXPECTED

Data Model Name: GU_EXP_DECOM_DATE

Short Description: Expected end date after which the unit is permanently unavailable

Long Description: Expected end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to TSO best knowledge at the time of data collection Used in studies as default

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	73415

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Reservoir capacity (RES_CAP)

Model Builder Name: RES_CAP

Data Model Name: RESERVOIR_CAPACITY

Short Description: Total reservoir storage capacity

Long Description: Total Reservoir capacity not to be split if few generating units are connected to same Reservoir

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	GWh
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Downstream Reservoir (DOWNSTREAM_RES_NAME)

Model Builder Name: DOWNSTREAM_RES_NAME

Data Model Name: RESERVOIR_DOWNSTREAM_RESERVOIR_NAME

Short Description: Name of the downstream Reservoir for pumping units

Long Description: Name of the downstream Reservoir for pumping units To act as a basis for the limit of the Reservoir dimension

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Reservoir type (RES_TYPE)

Model Builder Name: RES_TYPE

Data Model Name: RESERVOIR_TYPE

Short Description: Type of Reservoir: head or tail

Long Description: Type of Reservoir: head or tail

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Plant type (PEMMDB_PLANT_TYPE)

Model Builder Name: PEMMDB_PLANT_TYPE

Data Model Name: GU_PLANT_TYPE_HYDRO

Short Description: Technology type of the hydro unit

Long Description: Technology type of the hydro unit

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Lower Reservoir constraints (TAIL_RES_CONSTR)

Model Builder Name: TAIL_RES_CONSTR

Data Model Name: RESERVOIR_LOWER_RES_CONSTRAINT

Short Description: Limit to the Reservoir capacity deriving from the tail Reservoir

Long Description: Limit to the Reservoir capacity deriving from the tail Reservoir To be recorded as the ratio of the Reservoir capacity

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Head Reservoir constraints (HEAD_RES_CONSTR)

Model Builder Name: HEAD_RES_CONSTR

Data Model Name: RESERVOIR_UPPER_RES_CONSTRAINT

Short Description: Limit to the Reservoir capacity deriving from the head Reservoir

Long Description: Limit to the Reservoir capacity deriving from the head Reservoir To be recorded as the ratio of the Reservoir capacity

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

Reservoir Levels

Sheet Description

TSOs' estimates on what should be hydro reservoir levels at the beginning and the end of a particular Target Year.

The reservoir sheet aims to collect more granular reservoir capacity data. Hydro reservoir units listed in the Hydro reservoir sheet shall be properly referenced in the "Head reservoir name" and "Tail reservoir name" columns in the Hydro sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Head reservoir name" and "Tail reservoir name" columns in the Hydro sheet.

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Plant type (PEMMDB_PLANT_TYPE)

Model Builder Name: PEMMDB_PLANT_TYPE

Data Model Name: GU_PLANT_TYPE_HYDRO

Short Description: Technology type of the hydro unit

Long Description: Technology type of the hydro unit

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Reservoir level start (RESERVOIR_LEVEL_START)

Model Builder Name: RESERVOIR_LEVEL_START

Data Model Name: RL_RESERVOIR_STARTING_LEVEL

Short Description: The level of the Reservoir at the start of the study period

Long Description: The level of the Reservoir at the start of the study period

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Reservoir level end (RESERVOIR_LEVEL_END)

Model Builder Name: RESERVOIR_LEVEL_END

Data Model Name: RL_RESERVOIR_ENDING_LEVEL

Short Description: The level of the Reservoir at the end of the study period

Long Description: The level of the Reservoir at the end of the study period

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Reservoir Constraints

Sheet Description

TSOs' suggested hydro modelling constraints providing limitations for hydro dispatch. These constraints include limitations for hydro generation, hydro pumping and hydro reservoir levels.

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint type (HYDRO_CONSTRAINT_TYPE)

Model Builder Name: HYDRO_CONSTRAINT_TYPE

Data Model Name: HYDRO_CONSTRAINT_TYPE_RESERVOIR_ONLY

Short Description: The technical constraint that applies to this hydro technology

Long Description: The technical constraint that applies to this hydro technology

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint value (HYDRO_CONSTRAINT_VALUE)

Model Builder Name: HYDRO_CONSTRAINT_VALUE

Data Model Name: HYDRO_CONSTRAINT_VALUE

Short Description: The value of the technical constraint

Long Description: The value of the technical constraint

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	Dependent
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

PS Closed Constraints

Sheet Description

TSOs' suggested hydro modelling constraints providing limitations for hydro dispatch. These constraints include limitations for hydro generation, hydro pumping and hydro reservoir levels.

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint type (HYDRO_CONSTRAINT_TYPE)

Model Builder Name: HYDRO_CONSTRAINT_TYPE

Data Model Name: HYDRO_CONSTRAINT_TYPE_PUMPING_ONLY

Short Description: The technical constraint that applies to this hydro technology

Long Description: The technical constraint that applies to this hydro technology

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint value (HYDRO_CONSTRAINT_VALUE)

Model Builder Name: HYDRO_CONSTRAINT_VALUE

Data Model Name: HYDRO_CONSTRAINT_VALUE

Short Description: The value of the technical constraint

Long Description: The value of the technical constraint

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	Dependent
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

PS Open Constraints

Sheet Description

TSOs' suggested hydro modelling constraints providing limitations for hydro dispatch. These constraints include limitations for hydro generation, hydro pumping and hydro reservoir levels.

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint type (HYDRO_CONSTRAINT_TYPE)

Model Builder Name: HYDRO_CONSTRAINT_TYPE

Data Model Name: HYDRO_CONSTRAINT_TYPE_PUMPING_ONLY

Short Description: The technical constraint that applies to this hydro technology

Long Description: The technical constraint that applies to this hydro technology

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint value (HYDRO_CONSTRAINT_VALUE)

Model Builder Name: HYDRO_CONSTRAINT_VALUE

Data Model Name: HYDRO_CONSTRAINT_VALUE

Short Description: The value of the technical constraint

Long Description: The value of the technical constraint

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	Dependent
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Run of River Constraints

Sheet Description

TSOs' suggested hydro modelling constraints providing limitations for hydro dispatch. These constraints include limitations for hydro generation, hydro pumping and hydro reservoir levels.

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint type (HYDRO_CONSTRAINT_TYPE)

Model Builder Name: HYDRO_CONSTRAINT_TYPE

Data Model Name: HYDRO_CONSTRAINT_TYPE_ALL_TECHNOLOGIES

Short Description: The technical constraint that applies to this hydro technology

Long Description: The technical constraint that applies to this hydro technology

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint value (HYDRO_CONSTRAINT_VALUE)

Model Builder Name: HYDRO_CONSTRAINT_VALUE

Data Model Name: HYDRO_CONSTRAINT_VALUE

Short Description: The value of the technical constraint

Long Description: The value of the technical constraint

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	Dependent
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Pondage Constraints

Sheet Description

TSOs' suggested hydro modelling constraints providing limitations for hydro dispatch. These constraints include limitations for hydro generation, hydro pumping and hydro reservoir levels.

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint type (HYDRO_CONSTRAINT_TYPE)

Model Builder Name: HYDRO_CONSTRAINT_TYPE

Data Model Name: HYDRO_CONSTRAINT_TYPE_ALL_TECHNOLOGIES

Short Description: The technical constraint that applies to this hydro technology

Long Description: The technical constraint that applies to this hydro technology

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Constraint value (HYDRO_CONSTRAINT_VALUE)

Model Builder Name: HYDRO_CONSTRAINT_VALUE

Data Model Name: HYDRO_CONSTRAINT_VALUE

Short Description: The value of the technical constraint

Long Description: The value of the technical constraint

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	Dependent
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Electrolysers, Fuel Cells, Batteries & Demand Side Response

All relevant info of Batteries, Demand Side Response (DSR) and Power-to-X (P2X) units are collected in this file. P2X covers Electrolysers and Power-to-Heat. Fuel Cells are now collected as part of the thermal sheet.

Electrolysers, Fuel Cells, Batteries & Demand Side Response Sheets

- Batteries (Batteries)
- Demand Side Response (DSR)
- DSR Derating (DSR Derating)
- Power to Gas and Power to Heat (P2X)
- P2X Derating (P2X Derating)
- P2X Inelastic (P2X Inelastic)
- P2X Must-run (P2X Must-run)

Batteries

Sheet Description

Market participating battery storage capacities should be provided in the Batteries sheet. Market participating batteries will be explicitly modelled. Non-market participating batteries capacities are collected in the PEMMDB Demand input file and are used as input for the Demand Forecasting Toolbox (DFT) for demand profile calculation. Non-market participating batteries capacities should NOT be included in the Batteries sheet.

For the zonal splitting, it is expected an approximation of the split of the capacities reported for all technologies. As it does not differentiate between technologies, an approximation is sufficient. This is now a yearly attribute, and values have been copied to all years based on single value previously provided by TSO. The sum of the ratios must be equal to 1.0 for each year.

Generating unit name (UNIT_NAME)

Model Builder Name: UNIT_NAME

Data Model Name: GU_NAME

Short Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique

Long Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique. Linking market data to network data will primarily use the rdf:ID however unit name may be used to cross-validate the matching of units between datasets.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Group name (GROUP_NAME)

Model Builder Name: GROUP_NAME

Data Model Name: GU_GROUP_NAME

Short Description: Plant owner technology or any other hierarchy level for grouping purposes (not used in the modelling)

Long Description: Plant owner technology or any other hierarchy level for grouping purposes (not used in the modelling)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Generating unit rdf:ID (GEN_UNIT_RDFID)

Model Builder Name: GEN_UNIT_RDFID

Data Model Name: GU_MRID

Short Description: Unique ID for each generating unit

Long Description: The rdf:ID is the link between the network and market model The value should match with the network model that will be created in later processes Where

these are stable between different CGM versions they will be extremely useful to match network and market models If rdf:IDs are not stable please indicate in last column which version of CGM the rdf:ID refers to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

PECD zone (PECD_ZONE)

Model Builder Name: PECD_ZONE

Data Model Name: PECD_ZONE_ONSHORE

Short Description: PECD zone to which this unit / data applies to

Long Description: PECD zone where the generating unit is located (selectable in the dropdown-list) This is now a mandatory field as it will directly support zonal modelling whenever needed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Latitude (LAT_DEG)

Model Builder Name: LAT_DEG

Data Model Name: GU_LATITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical latitude and longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when available. Positive lattitudes are North of the Equator. Negative lattitudes are South of the Equator

Attributes

Attribute	Value
Minimum value	26.0
Maximum value	72.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Longitude (LON_DEG)

Model Builder Name: LON_DEG

Data Model Name: GU_LONGITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when available. Positive longitudes are East of London. Negative longitudes are West of London

Attributes

Attribute	Value
Minimum value	-26.0
Maximum value	50.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Commissioning date (COMMISSIONING_DATE)

Model Builder Name: COMMISSIONING_DATE

Data Model Name: GU_COMMIS_DATE

Short Description: First day of commercial availability of the unit

Long Description: Start (commisioning) date from which the generation unit is operationally available to generate power

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	0

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Decommissioning date official (DECOMMISSIONING_DATE_OFFICIAL)

Model Builder Name: DECOMMISSIONING_DATE_OFFICIAL

Data Model Name: GU_OFF_DECOM_DATE

Short Description: Official end date after which the unit is permanently unavailable

Long Description: Official end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to an official (public) source Used

in studies only if the expected date is not provided

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Decommissioning date expected (DECOMMISSIONING_DATE_EXPECTED)

Model Builder Name: DECOMMISSIONING_DATE_EXPECTED

Data Model Name: GU_EXP_DECOM_DATE

Short Description: Expected end date after which the unit is permanently unavailable

Long Description: Expected end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to TSO best knowledge at the time of data collection Used in studies as default

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	73415

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Plant type (PEMMDB_PLANT_TYPE)

Model Builder Name: PEMMDB_PLANT_TYPE

Data Model Name: GU_PLANT_TYPE_BATTERIES

Short Description: Technology type of the battery unit

Long Description: Technology type of the battery unit. A distinction is made between residential and utility-scale batteries

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Net maximum injection capacity (NET_MAX_CAP_GEN)

Model Builder Name: NET_MAX_CAP_GEN

Data Model Name: BATTERY_GENERATION_CAPACITY

Short Description: Maximum electrical net active power a battery unit can inject into the market

Long Description: Maximum electrical net active power a power plant can offer to the market (maximum electrical net active power a power plant can feed-in continuously without exceeding the designed physical limits of the unit)

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Net maximum offtake capacity (NET_MAX_CAP_DEM)

Model Builder Name: NET_MAX_CAP_DEM

Data Model Name: BATTERY_DEMAND_CAPACITY

Short Description: Maximum electrical net active power a battery unit can offtake from the market

Long Description: Maximum electrical net active power a power plant can ingest from the market (maximum electrical net active power a power plant can offtake continuously without exceeding the designed physical limits of the unit)

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Storage capacity (STO_CAP)

Model Builder Name: STO_CAP

Data Model Name: STORAGE_CAPACITY

Short Description: Energy storage capacity available

Long Description: Energy storage capacity available of the energy storage resource unit

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MWh
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Storage efficiency (EFF)

Model Builder Name: EFF

Data Model Name: STORAGE_EFFICIENCY

Short Description: Roundtrip efficiency of the charge-discharge cycle

Long Description: Roundtrip energy efficiency of the charge-discharge cycle of the energy storage unit

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Ramp down (RAMP_DOWN)

Model Builder Name: RAMP_DOWN

Data Model Name: GU_RAMP_DOWN

Short Description: Net decrease in power output

Long Description: Net decrease in power output that the generating unit can obtain in a given period of time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW/min
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Ramp up (RAMP_UP)

Model Builder Name: RAMP_UP

Data Model Name: GU_RAMP_UP

Short Description: Net increase in power output

Long Description: Net increase in power output that the generating unit can obtain in a given period of time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW/min
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Min hour down (MIN_HOUR_DOWN)

Model Builder Name: MIN_HOUR_DOWN

Data Model Name: GU_MIN_HOUR_DOWN

Short Description: Minimum number of hours that the generating unit shall be off

Long Description: Minimum number of hours between the generating unit shutdown and the following start-up

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Float
Unit	hours
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Min hour up (MIN_HOUR_UP)

Model Builder Name: MIN_HOUR_UP

Data Model Name: GU_MIN_HOUR_UP

Short Description: Minimum number of hours that the generating unit shall be on

Long Description: The minimum number of hours the unit must be ⍁on⍁ in any commitment cycle

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Float
Unit	hours
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Variable OM costs (VAR_OM_COST)

Model Builder Name: VAR_OM_COST

Data Model Name: GU_ECO_VAR_COSTS

Short Description: Non-fuel operations and maintenance cost

Long Description: Non-fuel operations and maintenance cost that includes cost of consumable materials (ammonia limestone water etc) production by products handling (ash slug etc) and maintenance that may be scheduled based on the number of operating hours or start-stop cycles of the plant The info is aimed to be use for consistency checks and common data validation; and it is not directly applied in the model

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	9999999.0
Type	Float
Unit	EUR/MWh
Default value	Common data

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Fixed OM costs (FIXED_OM_COSTS)

Model Builder Name: FIXED_OM_COSTS

Data Model Name: GU_FIX_OM_COSTS

Short Description: Operations and maintenance annual fixed charge

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc The info is aimed to be use for consistency checks and common data validation and it is not directly applied in the model

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	EUR/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

CAPEX (CAPEX)

Model Builder Name: CAPEX

Data Model Name: GU_CAPEX

Short Description: One-off capital expenditures of the asset

Long Description: One-off capital expenditures of the generating unit

This information is aimed to be use for consistency checks and common data validation although models will use common data values for modeling (not these individual values).

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	99999999.0
Type	Float
Unit	EUR/MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Not used

EVA exclusion reason (EVA_NT_REASON)

Model Builder Name: EVA_NT_REASON

Data Model Name: GU_EVA_REASON_NOT_SUBJECT_BATTERIES_HYDRO

Short Description: Selectable if not subject to EVA

Long Description: Reason that justifies capacity exclusion from EVA. To be specified only if the generating unit is not subject to EVA. There are several options: 1- Unit has an awarded capacity mechanism contract (CM contract). 2- Unit receives revenue from another source excluding CM heat/steam/waste or government policy (Other non-policy

revenues) 3- Technology is formally excluded from EVA e.g. nuclear (Excluded tech) 4 - Existing unit is driven by a certain policy (Policy Certain (existing)) 5 - Expected new-build capacity is driven by a certain policy (Policy Certain (new)) 6 - Expected new-build capacity is driven by either an uncertain policy or a certain policy with high deployment risk (Policy Uncertain)). Some categories not applicable for all technologies.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Not used

DSR

Sheet Description

Demand Side Response (DSR) should now be provided through this unique worksheet, containing the capacity evolution, the activation price (EUR/MWh), the maximum number of hours to be used per day (if there are some constraints).

Please note that DSR refers to the capacity of demand reduction available on the market (user NOT willing to pay more than activation price). This demand reduction should be price-responsive, and will be used in the market models when price rises above the value denoted in the activation price. The activation price should be defined based on a forecast of future prices, rather than current prices.

TSOs have the option to give an hourly profile of availability (DSR Derating), since for example some demand might not be available for reduction at night-time. Profiles should assume that 1 January is a Monday. If the value does not change, and the same amount of DSR is expected to be available, TSOs do not need to provide a derating profile. If a DSR Derating curve is provided the Curve ID should be properly referenced in the "Derating curve ID" column of the DSR sheet.

TSOs should note that the available demand response is additive across each unit. Also, since the demand side response represents negative demand bidding into the market, it represents demand already included in the forecasted demand profile.

The DSR Sheet now accommodates information regarding DSR in Redispatch phase!

If a DSR unit is only available either in Redispatch or Day-Ahead phase, TSO should indicate a price of -1 for the unavailable phase.

Generating unit name (UNIT_NAME)

Model Builder Name: UNIT_NAME

Data Model Name: GU_NAME

Short Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique

Long Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique. Linking

market data to network data will primarily use the rdf:ID however unit name may be used to cross-validate the matching of units between datasets.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Group name (GROUP_NAME)

Model Builder Name: GROUP_NAME

Data Model Name: GU_GROUP_NAME

Short Description: Plant owner technology or any other hierarchy level for grouping purposes (not used in the modelling)

Long Description: Plant owner technology or any other hierarchy level for grouping purposes (not used in the modelling)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Generating unit rdf:ID (GEN_UNIT_RDFID)

Model Builder Name: GEN_UNIT_RDFID

Data Model Name: GU_MRID

Short Description: Unique ID for each generating unit

Long Description: The rdf:ID is the link between the network and market model The value should match with the network model that will be created in later processes Where these are stable between different CGM versions they will be extremely useful to match network and market models If rdf:IDs are not stable please indicate in last column which version of CGM the rdf:ID refers to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ONSHORE_ONLY

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which market zone the provided data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

PECD zone (PECD_ZONE)

Model Builder Name: PECD_ZONE

Data Model Name: PECD_ZONE_ONSHORE

Short Description: PECD zone to which this unit / data applies to

Long Description: PECD zone where the generating unit is located (selectable in the dropdown-list) This is now a mandatory field as it will directly support zonal modelling whenever needed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Commissioning date (COMMISSIONING_DATE)

Model Builder Name: COMMISSIONING_DATE

Data Model Name: GU_COMMIS_DATE

Short Description: First day of commercial availability of the unit

Long Description: Start (commisioning) date from which the generation unit is operationally available to generate power

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	0

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Decommissioning date official (DECOMMISSIONING_DATE_OFFICIAL)

Model Builder Name: DECOMMISSIONING_DATE_OFFICIAL

Data Model Name: GU_OFF_DECOM_DATE

Short Description: Official end date after which the unit is permanently unavailable

Long Description: Official end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to an official (public) source Used

in studies only if the expected date is not provided

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Decommissioning date expected (DECOMMISSIONING_DATE_EXPECTED)

Model Builder Name: DECOMMISSIONING_DATE_EXPECTED

Data Model Name: GU_EXP_DECOM_DATE

Short Description: Expected end date after which the unit is permanently unavailable

Long Description: Expected end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to TSO best knowledge at the time of data collection Used in studies as default

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	73415

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Sector (SECTOR)

Model Builder Name: SECTOR

Data Model Name: DSR_SECTOR

Short Description: Sector of DSR

Long Description: Sector of the unit providing DSR (if the sector of the DSRs within price band is mixed choose the sector with the largest share of installed capacity)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Not used
Seasonal Outlook	Not used

Net maximum generating capacity (NET_MAX_GEN_CAP)

Model Builder Name: NET_MAX_GEN_CAP

Data Model Name: GU_MAX_NET_CAPACITY

Short Description: Maximum electrical net active power available on the market

Long Description: Maximum electrical net active power that a power plant can offer to the market (maximum electrical net active power that a power plant can feed-in continuously without exceeding the designed physical limits of the unit) Any capacity potentially reserved for ancillary services (e g FCR and FRR) must NOT be subtracted from the Net Maximum Generating Capacity

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Derating curve ID (DSR_DERATING_CURVE_ID)

Model Builder Name: DSR_DERATING_CURVE_ID

Data Model Name: DSR_DERATING_CURVE_ID

Short Description: ID chosen in the DSR Derating sheet (if provided)

Long Description: ID chosen in the DSR Derating sheet (if provided)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

ID activation price (ACT_PRICE_ID)

Model Builder Name: ACT_PRICE_ID

Data Model Name: DSR_INTRADAY_ACTIVATION_PRICE

Short Description: Intra-Day activation price for demand reduction

Long Description: Threshold price of activation of the DSR resource - when the ID market price of the model is above the limit the resource is activated based on the load that it can shed

Attributes

Attribute	Value
Minimum value	-9999.0
Maximum value	9999.0
Type	Float
Unit	EUR/MWh
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

DA activation price (ACT_PRICE_DA)

Model Builder Name: ACT_PRICE_DA

Data Model Name: DSR_DAYAHEAD_ACTIVATION_PRICE

Short Description: Day-Ahead activation price for demand reduction

Long Description: Threshold price of activation of the DSR resource - when the DAY-AHEAD market price of the model is above the limit the resource is activated based on the load that it can shed

Attributes

Attribute	Value
Minimum value	-9999.0
Maximum value	9999.0
Type	Float
Unit	EUR/MWh
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Max hours to be used per day (MAX_HOURS)

Model Builder Name: MAX_HOURS

Data Model Name: DSR_MAX_HOURS

Short Description: Max hours to be used per day (zero or empty value: no constraint available at all hours)

Long Description: Max number of hours to be used per day during which the load can be shed based on the market price

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	24.0
Type	Float
Unit	hours
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

DSR Type (DSR_TYPE)

Model Builder Name: DSR_TYPE

Data Model Name: DSR_TYPE

Short Description: Type of explicit DSR: demand shedding or demand shifting

Long Description: The DSR type describe how the DSR band shall be accounted in modelling Demand shedding is explict DSR that reduces its consumption above the activation price without recovery Demand shift is explicit DSR that shift its load upon recovery within a time window prescribed by DSR Shift Recovery Time

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

DSR Shift recovery window (DSR_SHIFT_RECOVERY_WINDOW)

Model Builder Name: DSR_SHIFT_RECOVERY_WINDOW

Data Model Name: DSR_SHIFT_RECOVERY_WINDOW

Short Description: Number of hours in which the demand (energy) need to be recovered (min 1 h - max 168 h)

Long Description: Number of hours in which the demand (energy) need to be recovered (min 1 h - max 168 h) Please note that time window is fixed starting from midnight (first day of the week) to avoid for unrealistic 'rolling' demand shifting

Attributes

Attribute	Value
Minimum value	2.0
Maximum value	168.0
Type	Integer
Unit	hours
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Not used

DSR Derating

Sheet Description

Derating data reflects that the total installed capacity of a unit is not always available for market optimization. Potential causes include:

- Units providing system service reserve. If you specify a value here, do not include this in the Reserve Requirements sheet.
- Units whose output power is limited by e.g., transmission constraints, cooling constraints, others.
- Units using inferior quality fuel.

The default derating value is 100%, which is equal to a reduction value of 0%. TSOs should provide hourly values possibly for the entire year. In case of constant curves, please provide only the first hourly value.

The modelling of derating introduced here is independent of the forced outage modelling method also called derating. The reduction of Net Capacity (NC) introduced with this parameter is independent of the forced outage and maintenance modelling in the studies: units can still be considered unavailable in the model because of maintenance and forced outage regardless of any defined derating.

Providing data sets related to derating follows the same logic as for must-run. The two specific sheets collect the derating curves related to unit groups and individual units.

Data collected in the Derating sheet

To model constraining effects, like fuel availability and quality, inner transmission constraints, heat/cold waves etc. time-dependent derating factors can be provided for each unit that was defined on the sheet.

The Derating worksheet contains the hourly ratio curves, which can be assigned to units. The data provider should fill a separate column for each different hourly curve (8760 values). In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs in this sheet and in the generation unit based "Derating curve ID" column in the sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Derating curve ID" column in the sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

The defined curves can be referenced by several units. In this case these units will still be modelled independently, but the derating ratio values will be the same for all of them.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The effective net capacity of a unit with defined derating curve is its original net capacity multiplied by the derating ratio value of the given hour in the simulation.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Derating ratio (DERATING_RATIO)

Model Builder Name: DERATING_RATIO

Data Model Name: DERATING_RATIO

Short Description: Ratio of the net maximum generating capacity available given the derating

Long Description: Ratio of the net maximum generating capacity representing the new maximum generating capacity as a result of the derating

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

P2X

Sheet Description

Electrolysers and Power-to-heat units are collected in the Electrolysers sheet.

Electrolysers

Demand for hydrogen is assumed to be equal to the installed capacity of electrolysers, i.e. it is a flat demand band. The hydrogen demand can be fulfilled either by operating electrolysers, or by steam-methane reforming. If the electricity price is below a certain threshold, electrolysers are covering the hydrogen demand. If the electricity price exceeds the threshold, steam-methane reforming processes are covering the hydrogen demand, implying no additional electricity demand. The threshold price is defined based on the price of hydrogen in the respective target year, which will be obtained from scenario building team, and the efficiency of electrolysers.

Power-to-heat

Power-to-heat (P2H) is considered as any industrial process which uses electricity to generate heat (e.g. district heat pumps). They have been introduced in the modelling of ERAA 2024 as for several countries across Europe these processes are or will become a significant part of power consumption in their electricity mix. In order to account for these units, a simplified data collection has been added to the PEMMDB.

Power-to-heat are modelled as price-responsive buyers with dynamic demand: they are consumer units which buy electricity when the price of the electricity is below a threshold activation price and they can buy up to a certain capacity (derived from the heat profile at a certain hour in the system). Both the activation price and the heat profile should be provided by the TSOs who wish to have power-to-heat units modelled in their systems.

If a unit is P2H, the following steps needs to be followed:

- In the "Electrolyser or Power-to-heat?" select Power-to-heat
- In the "Activation price (if power-to-heat)" column add the threshold activation price

In the Electrolysers Derating sheet you can define a derating curve for the power-to-heat unit (based on the heat profile of the unit) to be referenced in the "Derating curve ID"

column of the Electrolysers sheet.

Generating unit name (UNIT_NAME)

Model Builder Name: UNIT_NAME

Data Model Name: GU_NAME

Short Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique

Long Description: Name of generating unit. Does not have to be unique but combination of Unit Name Commissioning Data Fuel Type and Study Scenario must be unique. Linking market data to network data will primarily use the rdf:ID however unit name may be used to cross-validate the matching of units between datasets.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Group name (GROUP_NAME)

Model Builder Name: GROUP_NAME

Data Model Name: GU_GROUP_NAME

Short Description: Plant owner technology or any other hierarchy level for grouping purposes (not used in the modelling)

Long Description: Plant owner technology or any other hierarchy level for grouping purposes (not used in the modelling)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Generating unit rdf:ID (GEN_UNIT_RDFID)

Model Builder Name: GEN_UNIT_RDFID

Data Model Name: GU_MRID

Short Description: Unique ID for each generating unit

Long Description: The rdf:ID is the link between the network and market model The value should match with the network model that will be created in later processes Where these are stable between different CGM versions they will be extremely useful to match network and market models If rdf:IDs are not stable please indicate in last column which version of CGM the rdf:ID refers to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Not used
Seasonal Outlook	Not used

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Market zone (MARKET_NODE)

Model Builder Name: MARKET_NODE

Data Model Name: MARKET_ZONE_ALL

Short Description: The market zone / study zone to which this data applies to

Long Description: Every PEMMDB data object such as a generating unit a hydro constraint or a transfer link belongs to a market zone This data fields specifies to which

market zone the provided data applies to.

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

PECD zone (PECD_ZONE)

Model Builder Name: PECD_ZONE

Data Model Name: PECD_ZONE_ALL

Short Description: PECD zone to which this unit / data applies to

Long Description: PECD zone where the generating unit is located (selectable in the dropdown-list) This is now a mandatory field as it will directly support zonal modelling whenever needed

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

H2 zone (H2_ZONE)

Model Builder Name: H2_ZONE

Data Model Name: H2ZONE

Short Description: The H2 zone to which this data applies to

Long Description: The H2 zone to which this data applies to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Mandatory
Seasonal Outlook	Not used

Latitude (LAT_DEG)

Model Builder Name: LAT_DEG

Data Model Name: GU_LATITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical latitude and longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when available. Positive lattitudes are North of the Equator. Negative lattitudes are South of the Equator

Attributes

Attribute	Value
Minimum value	26.0
Maximum value	72.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Longitude (LON_DEG)

Model Builder Name: LON_DEG

Data Model Name: GU_LONGITUDE

Short Description: One positive or negative number in degrees (no S/W sign)

Long Description: Geographical longitude as a signed floating-point value (without N/S or E/W characters) Please provide the values in degrees should they be positive or negative Precision of three numbers after the comma should be sufficient when available. Positive longitudes are East of London. Negative longitudes are West of London

Attributes

Attribute	Value
Minimum value	-26.0
Maximum value	50.0
Type	Float
Unit	degrees
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Optional
Seasonal Outlook	Not used

Commissioning date (COMMISSIONING_DATE)

Model Builder Name: COMMISSIONING_DATE

Data Model Name: GU_COMMIS_DATE

Short Description: First day of commercial availability of the unit

Long Description: Start (commisioning) date from which the generation unit is operationally available to generate power

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	0

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Decommissioning date official (DECOMMISSIONING_DATE_OFFICIAL)

Model Builder Name: DECOMMISSIONING_DATE_OFFICIAL

Data Model Name: GU_OFF_DECOM_DATE

Short Description: Official end date after which the unit is permanently unavailable

Long Description: Official end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to an official (public) source Used in studies only if the expected date is not provided

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Decommissioning date expected (DECOMMISSIONING_DATE_EXPECTED)

Model Builder Name: DECOMMISSIONING_DATE_EXPECTED

Data Model Name: GU_EXP_DECOM_DATE

Short Description: Expected end date after which the unit is permanently unavailable

Long Description: Expected end (decommisioning) date after which the generation unit is permanently unavailable to generate power according to TSO best knowledge at the time of data collection Used in studies as default

Attributes

Attribute	Value
Minimum value	1900.0
Maximum value	2100.0
Type	Date (standalone)
Unit	dd/mm/yyyy
Default value	73415

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

Plant type (PEMMDB_PLANT_TYPE)

Model Builder Name: PEMMDB_PLANT_TYPE

Data Model Name: GU_PLANT_TYPE_ELECTROLYSERS

Short Description: Technology type of the P2X unit

Long Description: Technology type of the units that can covert electricity to gas or heat

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Sector location (SECTOR)

Model Builder Name: SECTOR

Data Model Name: ELECTROLYSER_SECTOR

Short Description: For which sector this generating unit is being deployed

Long Description: To avoid misunderstandings as in TYNDP2024:

There are 2 H2 zones:

- Zone 1: indirect H2 demand for decentralized upgrading facilities
- Zone 2: National and European H2 Markets

Electrolysers that were modelled in DE/GA 2024 scenarios and most probably will in NT too in the future:

- Z1: electrolyser connected to e-grid to supply indirect H2 demand for decentralized upgrading facilities
- Z2: electrolyser connected to e-grid to supply H2 market demand
- SRES: electrolyser connected to hybrid RES to supply indirect H2 demand for decentralized upgrading facilities
- DRES: electrolyser not connected to e-grid Connected to dedicated RES to inject H2 in the H2 market

(see TYNDP2024 Scenarios Methodology Report - section 9 3)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Not used
TYNDP	Mandatory
Seasonal Outlook	Not used

Net maximum generating capacity (NET_MAX_GEN_CAP)

Model Builder Name: NET_MAX_GEN_CAP

Data Model Name: GU_MAX_NET_CAPACITY

Short Description: Maximum electrical net active power available on the market

Long Description: Maximum electrical net active power that a power plant can offer to the market (maximum electrical net active power that a power plant can feed-in continuously without exceeding the designed physical limits of the unit) Any capacity potentially reserved for ancillary services (e g FCR and FRR) must NOT be subtracted from the Net Maximum Generating Capacity

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	999999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Conversion efficiency (EFF)

Model Builder Name: EFF

Data Model Name: P2X_EFFICIENCY

Short Description: Energy content (based on the HHV) of the output product (e.g. hydrogen) divided by the amount of electricity consumed

Long Description: Efficiency with which the unit converts electricity into the output product (e.g. hydrogen) Equal to the energy content - based on the higher heating value

(HVV) - of the output product produced divided by the amount of electricity consumed

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Optional
Seasonal Outlook	Mandatory

P2H activation price (P2H_ACTIVATION_PRICE)

Model Builder Name: P2H_ACTIVATION_PRICE

Data Model Name: P2H_ACTIVATION_PRICE

Short Description: The threshold price of activation under which the P2H unit will be activated subject to the heat profile

Long Description: ONLY FOR POWER-TO-HEAT UNITS - The threshold price of activation under which the P2H unit will be activated subject to the heat profile

Attributes

Attribute	Value
Minimum value	-9999.0
Maximum value	9999.0
Type	Integer
Unit	EUR/MWh
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Not used
Seasonal Outlook	Conditional

Derating curve ID (P2X_DERATING_CURVE_ID)

Model Builder Name: P2X_DERATING_CURVE_ID

Data Model Name: P2X_DERATING_CURVE_ID

Short Description: ID chosen in the P2X Derating sheet (if provided)

Long Description: ID chosen in the P2X Derating sheet (if provided)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Inelastic curve ID (P2X_INELASTIC_CURVE_ID)

Model Builder Name: P2X_INELASTIC_CURVE_ID

Data Model Name: P2X_INELASTIC_CURVE_ID

Short Description: ID chosen in the P2X Inelastic sheet (if provided)

Long Description: ID chosen in the P2X Inelastic sheet (if provided)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Must-run curve ID (P2X_MUSTRUN_CURVE_ID)

Model Builder Name: P2X_MUSTRUN_CURVE_ID

Data Model Name: P2X_MUSTRUN_CURVE_ID

Short Description: ID chosen in the P2X Must-run sheet (if provided)

Long Description: ID chosen in the P2X Must-run sheet (if provided)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Ramp up (RAMP_UP)

Model Builder Name: RAMP_UP

Data Model Name: GU_RAMP_UP

Short Description: Net increase in power output

Long Description: Net increase in power output that the generating unit can obtain in a given period of time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW/min
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Ramp down (RAMP_DOWN)

Model Builder Name: RAMP_DOWN

Data Model Name: GU_RAMP_DOWN

Short Description: Net decrease in power output

Long Description: Net decrease in power output that the generating unit can obtain in a given period of time

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	999999.0
Type	Float
Unit	MW/min
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Min hour up (MIN_HOUR_UP)

Model Builder Name: MIN_HOUR_UP

Data Model Name: GU_MIN_HOUR_UP

Short Description: Minimum number of hours that the generating unit shall be on

Long Description: The minimum number of hours the unit must be ⍰on⍰ in any commitment cycle

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Float
Unit	hours
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

Min hour down (MIN_HOUR_DOWN)

Model Builder Name: MIN_HOUR_DOWN

Data Model Name: GU_MIN_HOUR_DOWN

Short Description: Minimum number of hours that the generating unit shall be off

Long Description: Minimum number of hours between the generating unit shutdown and the following start-up

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	8760.0
Type	Float
Unit	hours
Default value	Common data

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

P2X Derating

Sheet Description

Derating data reflects that the total installed capacity of a unit is not always available for market optimization. Potential causes include:

- Units providing system service reserve. If you specify a value here, do not include this in the Reserve Requirements sheet.
- Units whose output power is limited by e.g., transmission constraints, cooling constraints, others.
- Units using inferior quality fuel.

The default derating value is 100%, which is equal to a reduction value of 0%. TSOs should provide hourly values possibly for the entire year. In case of constant curves, please provide only the first hourly value.

The modelling of derating introduced here is independent of the forced outage modelling method also called derating. The reduction of Net Capacity (NC) introduced with this parameter is independent of the forced outage and maintenance modelling in the studies: units can still be considered unavailable in the model because of maintenance and forced outage regardless of any defined derating.

Providing data sets related to derating follows the same logic as for must-run. The two specific sheets collect the derating curves related to unit groups and individual units.

Data collected in the Derating sheet

To model constraining effects, like fuel availability and quality, inner transmission constraints, heat/cold waves etc. time-dependent derating factors can be provided for each unit that was defined on the sheet.

The Derating worksheet contains the hourly ratio curves, which can be assigned to units. The data provider should fill a separate column for each different hourly curve (8760 values). In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs in this sheet and in the generation unit based "Derating curve ID" column in the sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Derating curve ID" column in the sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

The defined curves can be referenced by several units. In this case these units will still be modelled independently, but the derating ratio values will be the same for all of them.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The effective net capacity of a unit with defined derating curve is its original net capacity multiplied by the derating ratio value of the given hour in the simulation.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Derating ratio (DERATING_RATIO)

Model Builder Name: DERATING_RATIO

Data Model Name: DERATING_RATIO

Short Description: Ratio of the net maximum generating capacity available given the derating

Long Description: Ratio of the net maximum generating capacity representing the new maximum generating capacity as a result of the derating

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

P2X Inelastic

Sheet Description

This worksheet contains the hourly ratios of possible unit based inelastic profile criteria to be modelled in the market simulations. The data provider should fill a separate column for each different hourly curve (8760 values). In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs in this sheet and in the unit based "Inelastic curve ID" column in the sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Inelastic curve ID" column in the sheet.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The defined curves can be referenced by several units. In this case these units will still be modelled independently.

The provided ratios will be multiplied by the net capacity of the unit that is referencing the curve to get the inelasticity on this unit. The net capacities used for determining the amount of inelastic profile shouldn"t include any derating effect.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Inelastic profile (INELASTIC_RATIO)

Model Builder Name: INELASTIC_RATIO

Data Model Name: INELASTIC_PROFILE

Short Description: Ratio of the net maximum generation capacity to which the power output of the generating unit must be equal to

Long Description: Ratio of the net maximum generation capacity to which the power output of the generating unit must be equal to

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Optional
Seasonal Outlook	Optional

P2X Must-run

Sheet Description

It is important to indicate so called must-run obligations, which can have many causes (heat requirements, technical, economic/subsidies/taxes, environmental, etc.) and should not be confused with minimum stable generation.

Climatic years associated with must-runs can now be selected in these sheets.

Reasons that could induce must-run obligation include:

- Network constraints (overload management, voltage control)
- Specific policies (subsidies of lignite mines)
- Minimum number of units needed to provide system services
- Heat constraints

Reasons that, in most cases, should not induce must-run obligation include:

- Fully non-dispatchable units such as biomass, waste (if unit is fully non-dispatchable, it should be specified in either the sheet "Other Non-RES")
- Low flexibility. This can be represented by other parameters such as "Minimum stable generation" and "Ramp up/down rate"

Data collected in the Must-run sheet

This worksheet contains the hourly ratios of possible unit based must-run criteria to be modelled in the market simulations. The data provider should fill a separate column for each different hourly curve (8760 values). In case of constant curves, please provide only the first hourly value.

To reference the defined curve, the data provider should use matching curve IDs in this sheet and in the unit based "Must-run curve ID" column in the sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After

validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Must-run curve ID" column in the sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

The sheet also includes validity start and end year cells, to specify an interval of years, where the hourly curve should be considered. The defined starting and end year is included in the validity interval. The same curve ID can be used more than once if the validity intervals are not overlapping, thus defining different hourly curves for different years.

The defined curves can be referenced by several units. In this case these units will still be modelled independently.

The provided ratios will be multiplied by the net capacity of the unit that is referencing the curve to get the volume that must be committed on this unit. The net capacities used for determining the amount of must-run shouldn"t include any derating effect.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

PECD weather scenario (WEATHER_SCENARIO)

Model Builder Name: WEATHER_SCENARIO

Data Model Name: WEATHER_SCENARIO

Short Description: The weather scenario / climate year to which this data applied to

Long Description: The weather scenario / climate year to which this data applied to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Must run ratio (MUST_RUN_RATIO)

Model Builder Name: MUST_RUN_RATIO

Data Model Name: MUST_RUN_RATIO

Short Description: Lower bound of the instantaneous output

Long Description: Ratio of the maximum generating capacity that represents a lower bound of the instantaneous output

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Interconnectors

Net Transfer capacities (NTC) and Exchanges with non-explicitly modelled areas/countries are now collected in the same file.

Interconnectors Sheets

- Transfer Links (Transfer Links)
- Transfer Limits (Transfer Limits)
- Net Transfer Capacities (NTCs)
- Exchanges (Exchanges)
- Limits (Limits)

Transfer Links

Sheet Description

The Transfer Links sheet aims to collect technical specifications of the concerned interconnections. Indication of the type of transfer link shall be reported in the "Transfer Type" column (i.e. NTC, Exchange).

To reference the profiles defined in the NTCs and Exchanges sheets, the data provider should use matching curve IDs in the "NTC curve ID" and "Exchange flow curve ID" columns of the Transfer Links sheet and in the "Curve ID" data point of the NTCs and Exchanges sheets.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "NTC curve ID" and "Exchange flow curve ID" columns of the Transfer Links sheet.

In case of static NTCs profiles, the static NTC value should be provided in the "Static limit NTC" column of the Transfer Links sheet and no curve should be provided in the NTCs sheet.

Source (MARKET_ZONE_SOURCE)

Model Builder Name: MARKET_ZONE_SOURCE

Data Model Name: TL_MARKET_ZONE_SOURCE

Short Description: Market node from which power is transferred from

Long Description: Market node from which power is transferred from

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Destination (MARKET_ZONE_DESTINATION)

Model Builder Name: MARKET_ZONE_DESTINATION

Data Model Name: TL_MARKET_ZONE_DESTINATION

Short Description: Market node to which power is transferred to

Long Description: Market node to which power is transferred to

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Transfer type (TRANSFER_TYPE)

Model Builder Name: TRANSFER_TYPE

Data Model Name: TL_TRANSFER_TYPE

Short Description: Does this transfer link concern an NTC or Exchange profile?

Long Description: Indication of the transfer type If the selected value is NTC please provide further info of the interconnection in the additional NTCs data points

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Not used
Seasonal Outlook	Mandatory

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Validity starting year (YEAR_VALID_START)

Model Builder Name: YEAR_VALID_START

Data Model Name: TL_VALIDITY_START

Short Description: Starting year of the target period to which this transfer link applies to

Long Description: Starting year of the target period to which this curve applies The starting year is included in the validity interval

Attributes

Attribute	Value
Minimum value	2024.0
Maximum value	2100.0
Type	Date (start)
Unit	yyyy
Default value	2023

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Validity ending year (YEAR_VALID_END)

Model Builder Name: YEAR_VALID_END

Data Model Name: TL_VALIDITY_END

Short Description: Ending year of the target period to which this transfer link applies to

Long Description: Ending year of the target period to which this curve applies The ending year is included in the validity interval

Attributes

Attribute	Value
Minimum value	2024.0
Maximum value	2100.0
Type	Date (end)
Unit	yyyy
Default value	2100

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Transfer technology (TRANSFER_TECHNOLOGY)

Model Builder Name: TRANSFER_TECHNOLOGY

Data Model Name: TL_TRANSFER_TECHNOLOGY

Short Description: Is this NTC interconnection HVAC or HVDC?

Long Description: Indication of type of interconnection

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Not used
Seasonal Outlook	Conditional

Static limit NTC (NTC_LIMIT_CAPACITY_STATIC)

Model Builder Name: NTC_LIMIT_CAPACITY_STATIC

Data Model Name: TL_NTC_LIMIT_CAPACITY_STATIC

Short Description: Total sum of the operational capacity of the interconnectors (including n-1 for HVAC)

Long Description: Static value of the NTC Please provide a static limit only if the limit does not change over time If a static limit is provided no NTC curve shall be provided

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	100000.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Conditional
Seasonal Outlook	Conditional

NTC curve ID (NTC_CURVE_ID)

Model Builder Name: NTC_CURVE_ID

Data Model Name: NTC_CURVE

Short Description: Name of the NTC curve as recorded in the NTCs sheet

Long Description: Name of the NTC curve as recorded in the NTCs sheet Hourly NTC values of the interconnection shall be reported in the NTCs sheet under the same curve

ID

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Not used
Seasonal Outlook	Conditional

Number of poles (NO_POLES)

Model Builder Name: NO_POLES

Data Model Name: TL_POLES

Short Description: Number of poles of the NTC interconnection

Long Description: Number of poles of the interconnection To be provided only for NTC entries

Attributes

Attribute	Value
Minimum value	1.0
Maximum value	999.0
Type	Integer
Unit	poles
Default value	2

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Forced outage ratio (FOR)

Model Builder Name: FOR

Data Model Name: TL_FORCED_OUTAGE_RATIO

Short Description: Forced outage ratio (FOR) of the interconnector If N-1 Rated Power is provided then FOR must be set to zero

Long Description: Forced outage ratio (FOR) of the interconnector To be provided only for NTC entries If N-1 Rated Power is provided then FOR should be set to zero to avoid double-counting

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	1.0
Type	Float
Unit	[0-1]
Default value	6% for HVDC and 0% for HVAC

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Compliance 70% target (COMPL)

Model Builder Name: COMPL

Data Model Name: TL_COMPLIANCE

Short Description: Does the flow across this NTC interconnection comply to the 70% target?

Long Description: Indication of the compliance to the 70% rule To be provided only for NTC entries

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	Yes

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

FOR direction (FOR_DIRECTION)

Model Builder Name: FOR_DIRECTION

Data Model Name: TL_FOR_DIRECTION

Short Description: If a force outage causes a disruption in both directions or only in one direction

Long Description: In case of a forced outage does it cause a disruption in both directions (Bi-directional) or only in one direction (Uni-directional)? To be provided only for NTC entries

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	Bi-directional

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Exchange flow curve ID (EXCHANGE_FLOW_CURVE_ID)

Model Builder Name: EXCHANGE_FLOW_CURVE_ID

Data Model Name: EXCHANGE_FLOW_CURVE

Short Description: Name of the Exchange curve as recorded in the Exchanges sheet

Long Description: Name of the Exchange curve as recorded in the Exchanges sheet Hourly Exchange values shall be reported in the Exchanges sheet under the same curve ID

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Not used
Seasonal Outlook	Conditional

Transfer Limits

Sheet Description

The Transfer Limits sheet aims to collect specificities of the country level limits to power exports and imports.

In case of static limits, the static value of the limit should be reported in the "Static limit capacity" column of the Transfer Limits sheet and no hourly values should be provided in the Limits sheet.

In case of dynamic limits, hourly values should be provided in the Limits sheet under a curve ID properly referenced in the "Exchange limit curve ID" column of the Transfer Limits sheet.

Limit type (CURVE_TYPE)

Model Builder Name: CURVE_TYPE

Data Model Name: TL_EXCHANGE_LIMIT_TYPE

Short Description: Indication of the transfer limit type

Long Description: Indication of the transfer limit type

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Not used
Seasonal Outlook	Mandatory

Study scenario (STUDY_SCENARIO)

Model Builder Name: STUDY_SCENARIO

Data Model Name: STUDY_SCENARIO

Short Description: To which scenario is this datapoint applied

Long Description: There is a possibility to provide different data for the different scenerios within ERAA (e g a different capacity of a generating unit) This field facilitates the differentiation between the two different scenarios at an individual datapoint level

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	ERAA & TYNDP

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Validity starting year (YEAR_VALID_START)

Model Builder Name: YEAR_VALID_START

Data Model Name: TL_VALIDITY_START

Short Description: Starting year of the target period to which this transfer link applies to

Long Description: Starting year of the target period to which this curve applies The starting year is included in the validity interval

Attributes

Attribute	Value
Minimum value	2024.0
Maximum value	2100.0
Type	Date (start)
Unit	yyyy
Default value	2023

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Validity ending year (YEAR_VALID_END)

Model Builder Name: YEAR_VALID_END

Data Model Name: TL_VALIDITY_END

Short Description: Ending year of the target period to which this transfer link applies to

Long Description: Ending year of the target period to which this curve applies The ending year is included in the validity interval

Attributes

Attribute	Value
Minimum value	2024.0
Maximum value	2100.0
Type	Date (end)
Unit	yyyy
Default value	2100

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Static exchange limit (EXCHANGE_LIMIT_CAPACITY_STATIC)

Model Builder Name: EXCHANGE_LIMIT_CAPACITY_STATIC

Data Model Name: TL_EXCHANGE_LIMIT_CAPACITY_STATIC

Short Description: Value of the gross/net limits to the import/export

Long Description: Value of the gross/net limits to the import/export Please provide a static limit only if the limit does not change over time If a static limit is provided no Exchange limit curve shall be provided

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	100000.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Not used
Seasonal Outlook	Conditional

Exchange limit curve ID (EXCHANGE_LIMIT_CURVE_ID)

Model Builder Name: EXCHANGE_LIMIT_CURVE_ID

Data Model Name: EXCHANGE_LIMIT_CURVE

Short Description: Name of the Exchange limit curve as recorded in the Exchanges sheet

Long Description: Name of the Exchange limit curve as recorded in the Exchanges sheet If dynamic hourly limits shall be reported in the Limits sheet under the same curve ID

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (association)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Conditional
TYNDP	Not used
Seasonal Outlook	Conditional

NTCs

Sheet Description

TSOs will be asked to fill in the template with their best estimate/ best forecast (neither conservative nor optimistic) consulting lists of projects as well as the NTC values that were used in previous data collections.

To reference the profiles defined in the NTCs sheet, the data provider should use matching curve IDs in the "NTC curve ID" column of the Transfer Links sheet and in the "Curve ID" data point of the NTCs sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "NTC curve ID" column of the Transfer Links sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

Additional constraints will possibly be imposed by TSOs in the Transfer Limits and Limits sheets.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Transfer capacity (TRANSFER_CAPACITY)

Model Builder Name: TRANSFER_CAPACITY

Data Model Name: TRANSFER_CAPACITY

Short Description: Hourly values of energy transferred through the interconnection

Long Description: Hourly values of energy transferred through the interconnection

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	100000.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Exchanges

Sheet Description

The Exchanges sheet aims to collect hourly profiles for every market node with connections to non ENTSO-E countries.

The PEMMDB database does not contain data regarding the generation portfolio, demand and other parameters necessary to model the countries of the non ENTSO-E region, hence it is not possible to model the exchanges with these countries in the standard way (e.g. explicitly). For this reason, the exchanges are not an output of the simulation driven by the market, but are input to the model in the form of annual hourly data series.

Therefore, hourly timeseries of the estimated overall power (MW) that would be exchanged with all the countries outside the ENTSO-E region under regular market conditions from an economic standpoint (market competition) must be provided. The value is positive if the flow is a net import (i.e. the ENTSO-E member country imports from the non-ENTSO-E neighbour) and negative if it is a net export. The sum of the 8760 values represents the expected overall net amount of energy annually exchanged with countries outside the ENTSO-E region.

To reference the profiles defined in the NTCs sheet, the data provider should use matching curve IDs in the "Exchanges curve ID" column of the Transfer Links sheet and in the "Curve ID" data point of the Exchanges sheets.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Exchanges curve ID" column of the Transfer Links sheet.

How to build the hourly data series

If the required exchanges are related to the border, which is in operation at present, the hourly time series should be built based on the real operation, using information about the real commercial flows on that border as a base. It is important to account, to the possible extent, for the dependency of commercial exchanges/flows on fluctuation caused by the alternation of seasons (winter/summer), changing of the load within a day

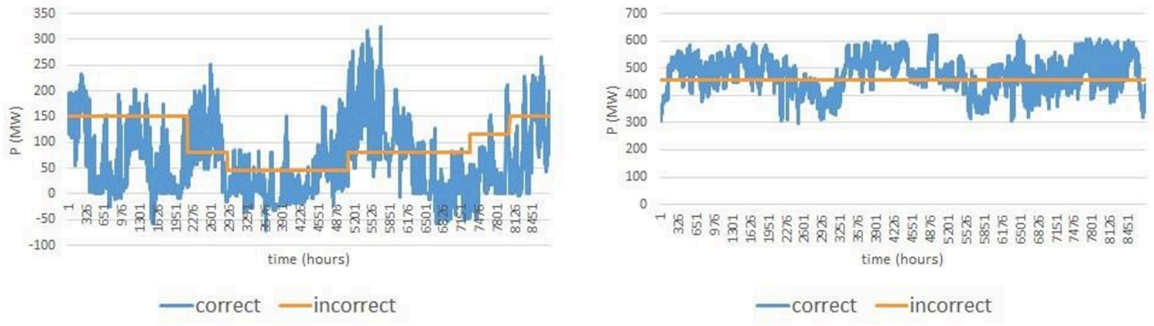
(peak/off-peak), and switching-off of related systems/equipment for the reasons of outages/regular annual maintenance or others.

For simplicity, the typical behaviour of the real exchanges should be kept even if future interconnection development project which might influence on these exchanges, is expected to be realised within the time frame considered.

Some countries interconnected via non ENTSO-E countries (e.g., Slovakia-Hungary Romania via Ukraine; Estonia-Latvia via Russia) may affect each other"s exchanges. If they do, TSOs of these countries should cooperate during the process of building these hourly timeseries to keep the correlation between these exchanges (e.g., build the exchanges on the base of the real exchanges from the same commonly agreed year).

If the required exchanges are related to a border which does not exist on the present, it is not possible to build the exchanges based on the real operation, and it is up to the TSO to build the exchanges profile based on his/her best estimate. However, it is important to keep in mind that the profile should not gain the shape of a line with the constant power in all year long, unless such exchanges are really expected. This may be the case for DC connections, but not for AC connections connecting two meshed systems, where constant exchanges are not likely to occur. TSOs having their own market simulation tool may build the exchanges by their internal market simulation. In this case, similar data sets should be used for both market assessments and adequacy modelling.

Simulated exchanges should be similar to real exchanges.



Exchanges hourly

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Capacity (EXCHANGE_FLOW_CAPACITY)

Model Builder Name: EXCHANGE_FLOW_CAPACITY

Data Model Name: TL_EXCHANGE_FLOW_CAPACITY

Short Description: Hourly values of the power exchanges with non ENTSOE-E countries (positive for export negative for import)

Long Description: Hourly values of the power exchanges with non ENTSOE-E countries

Attributes

Attribute	Value
Minimum value	-9999.0
Maximum value	9999.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Limits

Sheet Description

The Limits sheet aims to collect hourly profiles of country level limits to power exports and imports.

To reference the profiles defined in the Limits sheet, the data provider should use matching curve IDs in the "Exchange limit curve ID" column of the Transfer Limits sheet and in the "Curve ID" data point of the Limits sheet.

If the reference is not correct, when uploading the file to the PEMMDB App, the file will be rejected and specific error messages will be reported in the REJECTED file. After validating the file (uploading procedure in PEMMDB App) dropdown lists will be automatically generated for the "Exchange limit curve ID" column of the Transfer Limits sheet.

During the validation phase, constant timeseries or part of timeseries will be saved as a single value (i.e. 01.01-1h: 0.2, 02.01-7h: 0.3, meaning that all hours between the two timestamps have a constant value of 0.2) this will lead to having empty cells in validated excel files for the constant period.

An example on limitations can be found bellow:

Let"s suppose we have country A connected to B and C via NTC connections e.g. A-B =1000MW and A-C = 1000MW.

The theoretical MAX total simultaneous export/import can be 1000MW + 1000MW = 2000MW. However, it might not be possible to have the two NTC links at full export simultaneously so the Ã¢Â⍰Â⍰Gross Export limitation" BÃ¯Â⍰Â A + CÃ¯Â⍰Â A can be less, let"s say 1800MW. This is the maximum simultaneous Export that B/C are able to provide simultaneously and together to A. Furthermore, there might be a second limitation on how much A can actually import B + CÃ¯Â⍰Â A, which could still be less than the Ã¢Â⍰Â⍰Gross import limit" since country A cannot manage import levels higher than Ã¢Â⍰Â⍰Net import limit". The latter is typically related to the minimum amount of inertia that country A needs to maintain i.e., minimum number of units running (spinning) in their system for the system to be operationally stable & running within operational safe levels.

Curve ID (ID)

Model Builder Name: ID

Data Model Name: CU_ID

Short Description: Unique curve/profile ID

Long Description: Unique ID number used to link the curve/profile to the generation unit(s) that it applies to To be referenced in the Thermal sheet

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	String
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Mandatory

Capacity (EXCHANGE_LIMIT_CAPACITY_DYNAMIC)

Model Builder Name: EXCHANGE_LIMIT_CAPACITY_DYNAMIC

Data Model Name: TL_EXCHANGE_LIMIT_CAPACITY_DYNAMIC

Short Description: Hourly values of the gross/net limits to the import/export

Long Description: Hourly values of the gross/net limits to the import/export Please provide hourly values curve only if limits are dynamic If a curve is provided the Static limit capacity data point in the Transfer limit sheet shall be left blank

Attributes

Attribute	Value
Minimum value	0.0
Maximum value	100000.0
Type	Float
Unit	MW
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Optional
TYNDP	Not used
Seasonal Outlook	Optional

Demand

The Demand input sheet is used to collect data that is used by the Demand Forecasting Toolbox (https://entsoe-demand-forecast.heka.ai/login). The descriptions of the columns provided here give explanations and definitions related to the input sheet. For additional information on the Demand Forecasting Toolbox, please refer to the Demand Forecasting Toolbox documentation (https://docs.entsoe-demand-forecast.heka.ai/).

Demand Sheets

- Additional Information (Additional Information)
- Additional Load Profiles (Additional Load Profiles)
- Annual Additional Load (Annual Additional Load)
- Annual Demand (Annual Demand)
- Battery Discharging Profiles (Battery Discharging Profiles)
- Cooling Profiles (Cooling Profiles)
- EVs Annual Demand (EVs Annual Demand)
- EVs Daily Profiles (EVs Daily Profiles)
- Heating and Cooling Systems (Heating and Cooling Systems)
- Heating Profiles (Heating Profiles)
- Residential Elec Buying Prices (Residential Elec Buying Prices)
- Water Heating Profiles (Water Heating Profiles)

Additional Information

Additional Load Profiles

Annual Additional Load

Annual Demand

Battery Discharging Profiles

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Cooling Profiles

EVs Annual Demand

EVs Daily Profiles

Heating and Cooling Systems

Heating Profiles

Residential Elec Buying Prices

Target year to which this data applies to (TARGET_YEAR)

Model Builder Name: TARGET_YEAR

Data Model Name: STUDY_TARGET_YEAR

Short Description: Study target year to which this data applies

Long Description: Annual fixed charge that includes maintenance scheduled on a calendar basis salaries for facility staff etc.

This information is aimed to be use for consistency checks and common data validation although models will use common data values for price calculation and modeling (not these individual values)

Attributes

Attribute	Value
Minimum value	*No Data*
Maximum value	*No Data*
Type	Drop-down list (regular)
Unit	*No Data*
Default value	*No Data*

Requirements

Study	Requirement
ERAA	Mandatory
TYNDP	Mandatory
Seasonal Outlook	Not used

Water Heating Profiles

Glossary of Terms

The table below provides definitions and supporting information for acronyms and terms commonly used in the context of the PEMMDB data collection and related studies.

Acronyms and Terms	Definition	Supporting Information
ERAA	European Resource Adequacy Assessment	ERAA (https://www.entsoe.eu/eraa/)
TYNDP	Ten-Year Network Development Plan	TYNDP (https://www.entsoe.eu/tyndp/)
PEMMDB	Pan-European Market Modelling Database	https://pemmdb.entsoe.eu/
CIM	Common Information Model	https://www.entsoe.eu/digital/common-information-model/
RDF	Resource Description Framework	https://www.w3.org/RDF/
IGM	Individual Grid Model	
NTC	Net Transfer Capacity	
DSR	Demand Side Response	
P2X	Power to X	
RES	Renewable Energy Source	
SO	Seasonal Outlook	Seasonal Outlook (https://www.entsoe.eu/outlooks/seasonal/)
DFT	Demand Forecasting Toolbox	DFT (https://entsoe-demand-forecast.

		heka.ai/login)
PECD	Pan-European Climate Database	Climate Data Store (https://cds.climate.copernicus.eu/datasets/sis-energy-pecd?tab=overview)
Common Data	Default values used in the event that no data is provided by the correspondent	
Market Zone		
Bidding Zone		
Curve ID	Identifer used to link tabular data with timeseries data within the PEMMDB App	
FBMC	Flow-Based Market Coupling	
StG D&M	Steering Group Data & Models	
TSO	Transmission System Operator	
ENTSO-E	European Network of Transmission System Operators for Electricity	
ENTSO-G	European Network of Transmission System Operators for Gas	

SDC	System Development Committee	
BZR	Bidding Zone Review	BZR (https://www.entsoe.eu/network_codes/bzr/)
ET	Expert Team	
ToR	Terms of Reference	
PEMMDB	Pan-European Market Modelling Database	
NMD	Network Modelling Database	
DFT	Demand Forecasting Tool	DFT (https://entsoe-demand-forecast.heka.ai/login)
EVA	Economic Viability Assessment	
CGMES	Common Grid Model Exchange Standard	
CIM	Common Information Model	CIM (https://www.entsoe.eu/digital/common-information-model/)
RDF	Resource Description Framework	
IGM	Individual Grid Model	
PCI	Project of Common Interest	

LAC	Long-term Adequacy Correspondent	
SAC	Short-term Adequacy Correspondent	
ONDP	Offshore Network Development Plan	ONDP (https://www.entsoe.eu/outlooks/offshore-hub/tyndp-ondp/)