

Data Exchange Specifications

A Customer Data Requirements

Creating power forecasts is a statistical process that hinges on the quality of the data that is fed into the forecasting system, during both setup and ongoing operations. Thus, the delivery of the Services by enercast depends on Customer's cooperation in order to obtain such necessary data as set forth in the Documentation.

In particular, for each Asset (e. g. wind or solar plant, park, metering point or pooling station) for which a forecast is to be calculated, Customer needs to provide the following master data and operating data in the format prescribed by enercast:

Master Data

- Designation;
- Geographical coordinates (longitude and latitude) in decimal degrees (World Geodetic System 1984 WGS84);
- For wind assets:
 - Wind turbine manufacturer and model;
 - Wind turbine hub height and the rotor diameter measured from ground level in meters;
 - Installed capacity: total rated power in kW as per IEC 61400-12-2 (3.28) = quantity of power assigned, generally by a manufacturer, for a specified operating condition of a component, device or equipment;
 - Maximum feed-in in kW as per IEC 61400-12-2 (3.22) = net active electric power: measure of the wind turbine electric power output that is delivered to the electrical power network;
- For solar assets:
 - The azimuth of solar panels in degrees, with 0° = south and going clockwise (values bigger than 180° can also be stated as negative values);
 - The tilt of the solar panels in degrees, with 0° = horizontal with the panels facing the sky, maximum 90° = vertical;
 - Construction type: fixed tilt, seasonal tilt (timing and angles of seasonal tilt adjustments required), tracker (tracker type and parameters are required);
 - Installed capacity: DC capacity in kWp = aggregated nominal capacity of the solar panels according to standard test conditions (IEC 61215, IEC 61646, and UL 1703) at 25°C, 1000W/m² and 35°;
 - Maximum feed-in (AC) in kW;
- Any applicable power limitations (caps) at site or pooling station level.

Operating Data

- Historical, clean power generation data (meter data) for a minimum of 6 months (preferably 3 years);
- Historical changes in available capacities for the same period, including maintenances;
- Current power generation data (meter data) as used by Customer for quality assessment, delivered at least weekly, or as real-time data in case of the real-time option being used;
- Upcoming reductions of available capacities, including maintenance messages, as soon as they are known.

All operating data must be unambiguously mappable to the Asset it pertains to. All operating data should have a temporal resolution of 1 hour or less, and 15 minutes or less in case of real-time data. Real-time data must be provided no more than 1 minute after the end of the respective measurement period.

Contact Data

Customer shall submit and keep up-to-date at all times in its enercast Account at least one e-mail address where Customer will receive important information about the system operation and any required Customer actions, including the timely handling of service disruptions or connectivity issues.

General

- Any changes to the master data have to be communicated promptly to enercast, through any of the methods described in Section B.
- If enercast Support has been contracted to handle the initial setup, all relevant data must be available in full to enercast before the setup can be started.

B Data Exchange Methods

Customer Data can be delivered through the following channels:

- system-to-system communication (API) as specified in the enercast Documentation, which can be set up either as a data push by the customer (e. g. in case of master data) or as a recurring data pull by enercast (e. g. in case of real-time meter data),
- manual entry in the enercast Portal,
- file upload to the enercast Portal.

enercast Data can be delivered through the following channels:

- ad-hoc retrieval by Customer through API as specified in the enercast Documentation,
- automated, recurring delivery of data files via SFTP or e-mail,
- visualization in the enercast Portal,
- manual file download from the enercast Portal.

The data exchange channels available to individual Customers are subject to the products and features included with the purchased Services.

For more details regarding data formats and requirements, please refer to the information in the enercast Portal.

If Customer Data is retrieved from or enercast Data is delivered to infrastructure provided by Customer (for example, an FTP server in the Customer's domain), then Customer is responsible for ensuring that its infrastructure is accessible for enercast at all times. In case of e-mail deliveries, Customer bears the risk of e-mail transmission, including the risk of data corruption or loss in transit. If enercast, for reasons outside its immediate control, is unable to deliver to the destination specified by Customer for a continuous period of seven (7) days, enercast is no longer obliged to keep up delivery attempts.

C Accounting Methods

Different enercast products support different data exchange methods with different accounting methods as explained below. Please refer to the Order Form to see which accounting methods applies to your products and consult the enercast Terms of Use for more details.

Data Streams

When a recurring transmission of enercast Data or Customer Data has been configured for an Asset, e. g. an automated delivery of a forecast once every hour, or the import of real-time meter data every 15 minutes, this is considered a **Data Stream**.

Data Streams are counted separately for each Asset and each delivery channel. For example, the recurring delivery of 1 day-ahead forecast for one Asset plus 1 day-ahead forecast, 1 intraday forecast, and 1 weather parameter for a second Asset plus the import of real-time meter data for one of the Assets constitute a total of 5 Data Streams.

When a Data Stream has been set up, additional non-recurring deliveries of the same data, such as through manual file downloads, are not charged separately.

Unique Sites

Data which Customer requests ad hoc, such as a weather parameter for a site defined in an API call (with no Asset created in the enercast Account) or a single backcast calculated in the enercast Portal, do not constitute a Data Stream. Instead, the number of requests for **Unique Sites** within a calendar month is counted. The resulting total is used to determine the fee for the given month.

A Unique Site is identified by its geo coordinates in degrees with a precision of four decimals. Additional requests for the same site during the calendar month will not reduce the quota further.

For Services based on ad-hoc requests, the Order Form may also specify a **limit of concurrent requests**. This refers to the number of concurrently open connections or number of concurrently calculated locations, whichever is larger. Excess requests will be discarded and not queued. Higher service tiers may feature a dedicated endpoint and improved response times.

Annual Quota

For some products, the subscription includes an **Annual Quota** of Unique Sites for which requests can be made. In this case, the quota is purchased in advance and individual requests can be made any time during the contract year until the annual quota has been exhausted.

Unique Sites are defined as above, with the exception that the site counter is reset at the beginning of each contract year (instead of monthly). Unused quota can be carried forward as long as the subscription for the respective product is maintained without interruption. Users of enercast YAS Premium or Professional also have access to the enerast YAS Basic functionality, in which case an instant physical model backcast is counted as 1/10th (for Premium) or 1/5th (for Professional) against the annual quota.