

Performance Monitoring CSV File Format

Date	Version	Comments	Author
1/09/2020	1	Initial release	National Grid ESO
5/10/2020	2	Example Changes and soe description update	National Grid ESO
21/10/2020	3	Clarification on data rows and csv example update	National Grid ESO
28/09/2021	4	Additional fields, Limits and data row submissions	National Grid ESO

File Naming

CSV files shall be named in the format **DCUID_Timestamp_perfmonv1.csv**.

DCUID is the unique identifier assigned to the Response Unit (DCU).

Timestamp is the start of the performance data hour (UTC) and is in the format YYYYMMDDHHMMSS where:

- YYYY is the 4-digit year
- MM is the month of year zero padded to 2 characters (00-12)
- DD is the day of month zero padded to 2 characters (01-31)
- HH is the hour of day in 24-hour format zero padded to 2 characters (00-23)
- MM is the minutes past hour zero padded to 2 characters (00-59)
- SS is the seconds past minute zero padded to 2 characters (00-59)

An example filename for DCUID "ABCDE" and timestamp "15/09/2020 17:00:00" is:

ABCDE_20200915170000_perfmonv1.csv

File Size and Creation Frequency

Each CSV file contains data for a single Response Unit.

Each CSV file must contain 1 hour of data (i.e. elapsed delta between first and last timestamp supplied in the file).

File Structure

Text Encoding

CSV files shall be formatted in accordance with RFC 4180, encoded using ISO 8859-1 text encoding (no byte order mark) and using CR LF line endings.

Headers

The first line of the CSV file shall contain the header line.

The headers are listed below. All headers must be in lower case and must match the exact naming and order specified. All mandatory headers must be included even if some are not applicable to the unit.

Field	Description	Example	Min Value	Max Value	Optional / Mandatory
unit	Unique identifier assigned to the Response Unit (DCU)	ABCDE	0 Characters	10 Characters	Mandatory
t	ISO 8601 timestamp in UTC including milliseconds	2020-08-04T16:56:46.500Z	24 Characters	24 Characters	Mandatory
f_hz	Input frequency in Hz to 3 decimal places	49.992	40	60	Mandatory
baseline_mw	Baseline in MW to 4 decimal places	5.1256	-1000	1000	Mandatory
p_mw	Measured active power output or demand in MW to 4 decimal places	10.5678	-1000	1000	Mandatory
soe_import_mwh	State of energy (MWh) – (Capacity to Import) to 4 decimal places	17.6125	0	1000	Mandatory
soe_export_mwh	State of energy (MWh) – (Capacity to Export) to 4 decimal places	12.5175	0	1000	Mandatory
availability	Flag field to indicate availability of the unit. 0 = LF and HF Unavailable 1 = LF Available 2 = HF Available 3 = LF and HF Available	1	0	3	Mandatory

Table 1 - CSV Headers

Data Rows

The lines following the header line shall contain the captured performance monitoring data.

Data rows should be included in the file in timestamp ascending order, with one row per Response Unit at 50ms interval between each timestamp (i.e. at 20 Hz).

Uploaded files should contain exactly 72000 data rows (one hour of performance data) or they will be rejected. If meter connection issues occur and there are missing rows, wait until a full set of data is

available prior to upload. In the event of delayed or incorrect data, you have until 4th of the next month at 24:00:00 UTC to upload correct or amended data before it is considered final. For example, if data for 2021-03-04 16:30 UTC and 2021-03-31 05:00 UTC require resubmission, provider can resubmit this data until 2021-04-04 24:00 UTC.

If there are missing data points that are recorded by the unit but not transmitted to NG system successfully, then it is highly suggested that a second attempt is made to submit a complete file. If there are missing data points and no good replacement for the missing data is available, then it is advised that the missing data points are replaced with default values (that is 50.000 for frequency "f_hz" and 0 for the fields "baseline_mw", "p_mw", "soe_import_mwh", "soe_export_mwh").

A value should always be included for every mandatory field in the data row, empty cells for these fields are treated as invalid.

Service Unavailability

For any unavailability period declared in the performance monitoring CSV data, the associated rows with the unavailability should have 0 submitted as the "availability" field against the correct timestamp "t" and unit id "unit".

The remaining fields could have the metered data as normal or, if they are not available, they should be defaulted to 50.000 for frequency "f_hz" and 0 for the fields "baseline_mw", "p_mw", "soe_import_mwh" and "soe_export_mwh".

If a file for a full hour is not submitted, the unit will be considered "Unavailable" for that full hour.

Timestamps

Timestamps should be formatted according to RFC 3339 and in UTC time zone. This will give timestamps of exactly 23 characters in length and in the format **YYYY-MM-DDTHH:MM:SS.nnnZ** where:

- YYYY is the 4-digit year
- MM is the month of year zero padded to 2 characters (00-12)
- DD is the day of month zero padded to 2 characters (01-31)
- T is a fixed separator character between the date and time parts
- HH is the hour of day in 24-hour format zero padded to 2 characters (00-23)
- MM is the minutes past hour zero padded to 2 characters (00-59)
- SS is the seconds past minute zero padded to 2 characters (00-59)
- nnn is the milliseconds past second padded to 3 characters (000-999)
- Z is a fixed time zone identifier to indicate the timestamp is in UTC time zone

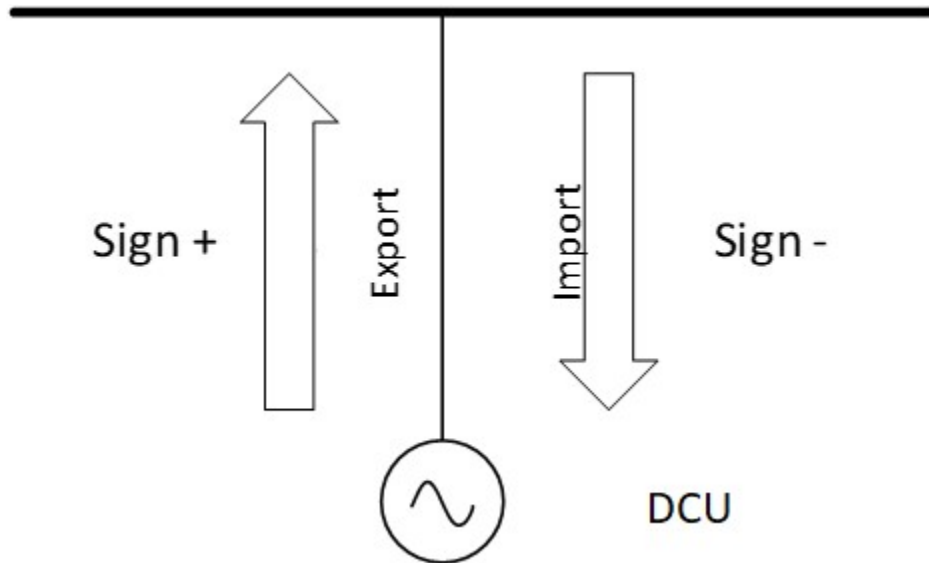
The first data row should have a timestamp of the start of the performance data hour with 0 seconds and 0 milliseconds. Subsequent timestamps should then be synchronised, so rows are provided at exactly 50ms intervals (i.e. subsequent milliseconds are 000, 050, 100, 150, 200, 250, etc).

Example File

```
unit,t,f_hz,baseline_mw,p_mw,soe_import_mwh,soe_export_mwh,availability,  
ABCDE,2020-08-04T16:00:00.000Z,49.8,0,5,25,25,3,  
ABCDE,2020-08-04T16:00:00.050Z,49.792,-0.05,4.95,25.01,24.99,3,  
ABCDE,2020-08-04T16:00:00.100Z,49.785,-0.1,4.9,25.03,24.97,3,  
ABCDE,2020-08-04T16:00:00.150Z,49.777,-0.15,4.85,25.05,24.95,3,  
ABCDE,2020-08-04T16:00:00.200Z,49.77,-0.2,4.8,25.1,24.9,0,  
ABCDE,2020-08-04T16:00:00.250Z,49.762,-0.25,7.125,25.15,24.85,0
```

Sign Convention

Both Baseline (MW) and Active Power (MW) signals are directional and must follow the following sign convention:



File Upload

The CSV will need to be uploaded via an API using a HTTP POST request over HTTPS at a random time during the proceeding hour.

To obtain API connection details, contact commercial.operation@nationalgrideso.com.