

## 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

### 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 may contain a maximum of 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 headers must be included even if some are not applicable to the unit.

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

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 timestamp with 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 24 hours from the end of the performance hours to upload correct or amended data before it is considered final.

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

For fields with decimal places, the numbers should be rounded to the nearest value.

## 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).

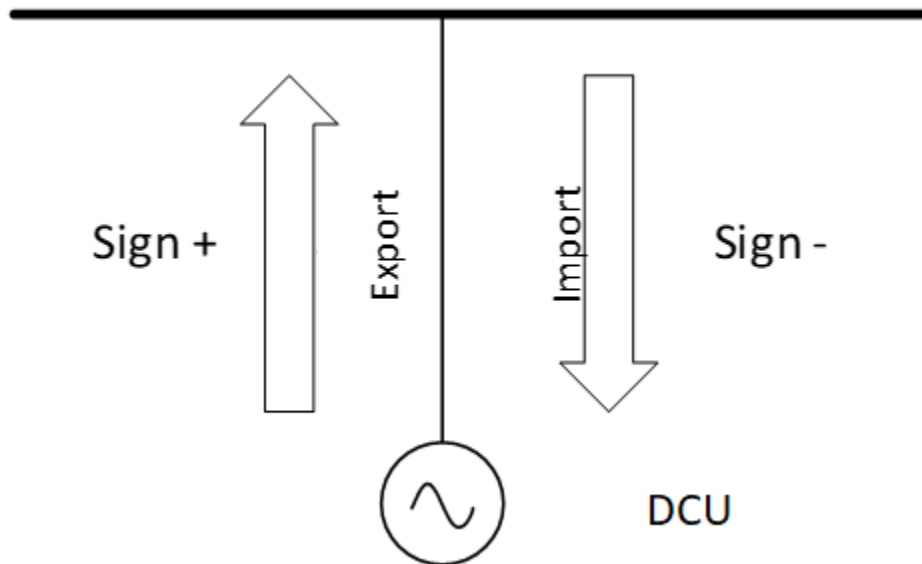
### Example CSV File Format

```
unit,t,f_hz,baseline_mw,p_mw,soe_import_mwh,soe_export_mwh,availability
ABCDE,2020-08-04T16:00:00.000Z,49.800,0.0000,5.0000,25.0000,25.0000,1
ABCDE,2020-08-04T16:00:00.050Z,49.792,-0.0500,4.9500,25.0100,24.9900,1
ABCDE,2020-08-04T16:00:00.100Z,49.785,-0.1000,4.9000,25.0300,24.9700,1
ABCDE,2020-08-04T16:00:00.150Z,49.777,-0.1500,4.8500,25.0500,24.9500,1
ABCDE,2020-08-04T16:00:00.200Z,49.770,-0.2000,4.8000,25.1000,24.9000,1
ABCDE,2020-08-04T16:00:00.250Z,49.762,-0.2500,7.1250,25.1500,24.8500,1
ABCDE,2020-08-04T16:00:00.300Z,49.755,-0.3000,9.4500,25.2000,24.8000,1
```

...

### 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](mailto:commercial.operation@nationalgrideso.com).