DSGS Option 3 Meter Data Format

1 Format

The Olivine Option 3 Meter Data Format is used to communicate interval data, such as interval meter readings. This is a tab-delimited format (.tsv), where individual fields (columns) are separated by tab characters.

Notes for DSGS Option 3 Provider Submetering:

- This general Meter Data Format has been annotated with specific instructions for DSGS Option 3 Providers.
- The following specifics have been defined for this program:
    - Please submit measured net discharge data in 15-minute intervals, where positive numbers will indicate net charging; negative will indicate net discharge.
    - Files must be formatted with one service agreement meter-day per row.[1].
    - All intervals for each day of the month must be provided (not just event days).
    - Data must be provided for each month for which any site is enrolled.
- For participants with multiple batteries at one site, each device's submeter data should be aggregated in the same row (i.e. one row of data per Service Point ID, for each day).
- If the data needs to be provided in multiple files, sort the data first as specified in Section 4.1 before splitting the data into smaller files.
- Timestamps are formatted with time zone offset. Olivine's preference is to receive the data in local time with offset (i.e., -7:00); however, UTC is also acceptable. See section 7.
- Gzip the file(s). The file extension must be: .tsv.gz

2 Fields

The following table lists the individual fields. Each table row is a column in the data file. The header row in each file must contain the exact name listed in the "Column Name" values. All values provided must follow the corresponding description. The columns must appear from left to right in the order in which they appear in the table and be separated by tab characters.

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[1] Note that daylight savings time transition days can be supported with 92 or 100 intervals or record start times can be shifted accordingly.

Column Name	Type	Description
Service Point ID	string	This is the Unique ID from DSGS Enrolled Participation Reports. It is the identification number that uniquely identifies the customer from the perspective of the VPP aggregator.
UOM	string	The unit of measure, such as kWh. For DSGS, please specify 'kWh' or 'kW'.
Flow Direction	string	Indicates the direction of current flow for metered data. For DSGS Option 3, please submit data with Net flow direction. Specify 'Net' to denote a single net channel combining charge and discharge.
Interval Length	Integer	In seconds (e.g. 900 corresponds to 15-minute interval data). For DSGS Option 3, please use 900 for 15-minute intervals or 3600 for 1-hour intervals.
Start Time	DateTime with offset	This is the start time of the first interval in the row. Example: 2021-09-10T00:00:00-7:00. For DSGS Option 3, the Start Time should correspond to the first interval of the day.
End Time	DateTime with offset	This is the end time of the last interval in the row. Example: 2021-09-11T00:00:00-7:00. For DSGS Option 3, the End Time should be exactly one day after the Start Time such that each row has one day's worth of meter data attached.
Interval values (no column name in header row)	Decimal or Composite	The Interval values will consist of multiple columns per row, each representing successive intervals (see Interval Values section below). Positive numbers indicate net charge and negative numbers indicate net discharge. For DSGS Option 3, each row should contain one day's worth of interval meter values.

3   Interval Values

3.1   Number of Intervals per Row

When providing data in volume to Olivine, please include a whole day in each row. For 15-minute meter data, we expect 102 total columns (6 standard columns as described above, and 96 interval meter value columns).

3.2   Missing Interval Values

Individual interval columns must be left empty to indicate missing data.

3.3   Individual Column Formatting

Interval columns should be formatted as a decimal value.

A row will contain one day's worth of meter data. The number of columns for the row will depend on the meter data interval length.

4   File Organization

4.1   Sorting

Sort rows by Parent ID, Service Point ID, Channel Number, Kind, UOM, Flow Direction, StartTime and EndTime.

4.2   Duplicate Intervals

Files should not contain data for the same interval more than once. All data must be consolidated before generating the file.

5   Header Row

Files must include a header row, containing a tab-delimited list of the exact names specified in the "Column Name" values of the table in the Fields section. Columns containing interval values need not have a corresponding column heading.

5.1   Files Consumed by Olivine DER

Olivine DER will accept all variants, as long as they abide by the rules defined in this document.

6   Date and Time Formatting

Times can be expressed in local time (with offset), or in UTC, noting that local time w/offset is preferred as it captures more information than UTC alone.

The start and end time fields must be formatted as described in this section.

Exactly the components shown here must be present, with exactly this punctuation.

YYYY-MM-DDThh:mmTZD or YYYY-MM-DDThh:mm:ssTZD

- YYYY: Four-digit year
- MM: Two-digit month (01 - 12)
- DD: Two-digit day (01 - 31)
- hh: Two-digit hour (00 - 59)
- mm: Two-digit minute (00 – 59)
- ss: Two-digit second (00 – 59). This is optional.
- TZD: The time zone designator (Z for UTC or +hh:mm or -hh:mm)

- o   -07:00 for Pacific Daylight Time

6.1   Notes

- The "T" appears literally in the string, to indicate the beginning of the time element.
- Preferably times will be expressed in the local time zone with the correct offset, but UTC is acceptable.
- All parts are required, except seconds, which is optional and should only be included if the interval length is shorter than 1 minute.
- Always add leading zeros to the month, day, hour, minute and (if present) second portions.
- There should be no spaces between any of the elements.
- The format is based on ISO 8601, but the Olivine specification is stricter. For example this format does not support optional decimal digits for seconds.

6.2   Examples

The following examples correspond to the same time (May 23, 2017 2:15 PM Pacific Time):

    2017-05-23T14:15-07:00
    2017-05-23T14:15:00-07:00
    2017-05-23T21:15Z

6.3   Daylight Saving Time

If times are expressed in local time, care must be taken to provide the correct time and offset for each interval. Here's an example for the spring DST transition in Pacific Time:

    2017-03-12T00:15-08:00
    2017-03-12T00:30-08:00
    2017-03-12T00:45-08:00
    2017-03-12T01:00-08:00
    2017-03-12T01:15-08:00
    2017-03-12T01:30-08:00
    2017-03-12T01:45-08:00
    2017-03-12T03:00-07:00
    2017-03-12T03:15-07:00
    2017-03-12T03:30-07:00
    2017-03-12T03:45-07:00
    2017-03-12T04:00-07:00
    ...

Below is an example for the fall DST transition in Pacific Time:

    2017-11-05T00:15-07:00
    2017-11-05T00:30-07:00
    2017-11-05T00:45-07:00
    2017-11-05T01:00-07:00
    2017-11-05T01:15-07:00
    2017-11-05T01:30-07:00
    2017-11-05T01:45-07:00

```
2017-11-05T01:00-08:00
2017-11-05T01:15-08:00
2017-11-05T01:30-08:00
2017-11-05T01:45-08:00
2017-11-05T02:00-08:00
2017-11-05T02:15-08:00
2017-11-05T02:30-08:00
…
```

6.4 Format Designators in Various Development Languages:

Language	Format
Microsoft .NET	yyyy-MM-ddTHH:mmzzz or yyyy-MM-ddTHH:mm:sszzz

7 File Naming

Extension: *.tsv

Additional file naming rules may be provided for specific implementations.

DSGS: DSGS-Option-3-<ProviderName>-MeterData-YYYYMMDDHHmmSS-<nnn>.tsv.gz

- o ProviderName is the name of the enrolled DSGS provider
- o n = number, incremented for files generated in the same second
- o HH must be 24-hour format
- o YYYYMMDDHHmmSS is the time at which the file was generated
- Example:
  - o DSGS-Option-3-<ProviderName>-MeterData-20221014082356-000.tsv.gz
  - o DSGS-Option-3--<ProviderName>-MeterData-20221014082356-001.tsv.gz
  - o DSGS-Option-3-<ProviderName>-MeterData-20221014082358-000.tsv.gz

8 Units of Measure

The following units of measure are currently supported:

Value	Description
kWh	For DSGS Option 3, please submit kWh data if possible.
kW	

9 Flow Direction

The Flow Direction field is optional, but it is imperative to specify the flow direction in cases where the implementation supports data with a non-forward flow. For DSGS Option 3, please submit data with Net flow direction.

Value	Description
Net	Net metered (Forward minus Reverse flow). Can be positive or negative.
Forward	"Delivered," or "Imported" energy. Must always be a positive value
Reverse	"Received," or "Exported" energy. Must always be a positive value