# NPC timing and data format

This document describes the measurement sequence and file format to be obeyed by all participants who plan to submit data during the NPC.

## Measurement Series

All irradiance measurements will be taken in series' of 24 minutes duration. Each series will start at the top of the hour (:00 minutes) and the bottom of the hour (:30 minutes). The times will be recorded in MST (GMT-7), please synchronize your computers to our visual clock or a reliable time source. The start time of the series is the time, when the first irradiance reading is taken. Enough lead time (6 minutes) will be allowed for preparation and electrical calibration before each series. The base cadence is one irradiance reading every 30 seconds, allowing for 49 irradiance readings at the base cadence. Faster/slower cadences are acceptable if they are an integer multiple/fraction of the base cadence, e.g. 15 sec, 90 sec.

## File Format for Data Submission

Data files can contain one pyrheliometer or multiple pyrheliometers; merging or splitting of multiple pyrheliometer is NOT required. Microsoft Excel format is no longer accepted, the files must be ASCII text encoded and must include a header. **Do NOT apply any previous WRR correction factors to your measurements.** Please be consistent in the naming convention of your cavity (e.g., "AHF12345" or "PM06-12345" in the header). Two possible acceptable data formats are shown below:

Example 1 (first nine readings from measurement run)

```
RdgNum YY MM DD Time AHF28968 AHF29220 AHF30713 AHF32452
1 2019 09 25 07:30:00 792.891383 793.308470 793.161837 768.104786
2 2019 09 25 07:30:30 794.052431 794.716003 794.756640 769.214541
3 2019 09 25 07:31:00 796.619967 796.556400 796.474782 771.513999
4 2019 09 25 07:31:30 798.484738 798.395833 798.377455 773.389923
5 2019 09 25 07:32:00 798.854816 799.056216 799.015185 773.151982
6 2019 09 25 07:32:30 801.064738 800.591005 800.794518 775.451440
7 2019 09 25 07:33:00 803.312051 803.585386 803.690596 777.737573
8 2019 09 25 07:33:30 804.102062 803.611416 803.825409 778.464720
9 2019 09 25 07:34:00 805.312007 805.780558 805.445071 780.221673
```

Example 2

```
Date,Time,PMO6-12345
09/25/2019,13:00:00,982.90
09/25/2019,13:01:30,981.37
09/25/2019,13:03:00,971.34
09/25/2019,13:04:30,935.25
09/25/2019,13:06:00,924.86
09/25/2019,13:07:30,928.52
09/25/2019,13:09:00,941.10
```

```
09/25/2019,13:10:30,928.83
09/25/2019,13:12:00,951.55
09/25/2019,13:13:30,966.73
09/25/2019,13:15:00,976.18
09/25/2019,13:16:30,983.59
09/25/2019,13:18:00,985.97
09/25/2019,13:19:30,983.34
09/25/2019,13:21:00,984.08
09/25/2019,13:22:30,983.88
09/25/2019,13:24:00,983.43
```

Please note the following:

- Please use a single space, tab, or comma to delimit columns (do not mix delimiters)
- Reading number is optional
- Date and time columns are required, please use military time (do not use AM and PM)
- All columns should be labeled in header
- Please use unique filenames, which include your organization name (or cavity identifier) and the date (e.g. "SOLARLAB_20190925.txt" or "AHF12345_20190925.txt").  Preferred file extension is ".txt".  Excel format not accepted.

## Data Submission

At the end of the day, measurement files will be submitted by email to NREL.  NREL will provide daily preliminary results for each pyrheliometer the following day.