Dr Paul Rogers

29 September 2024

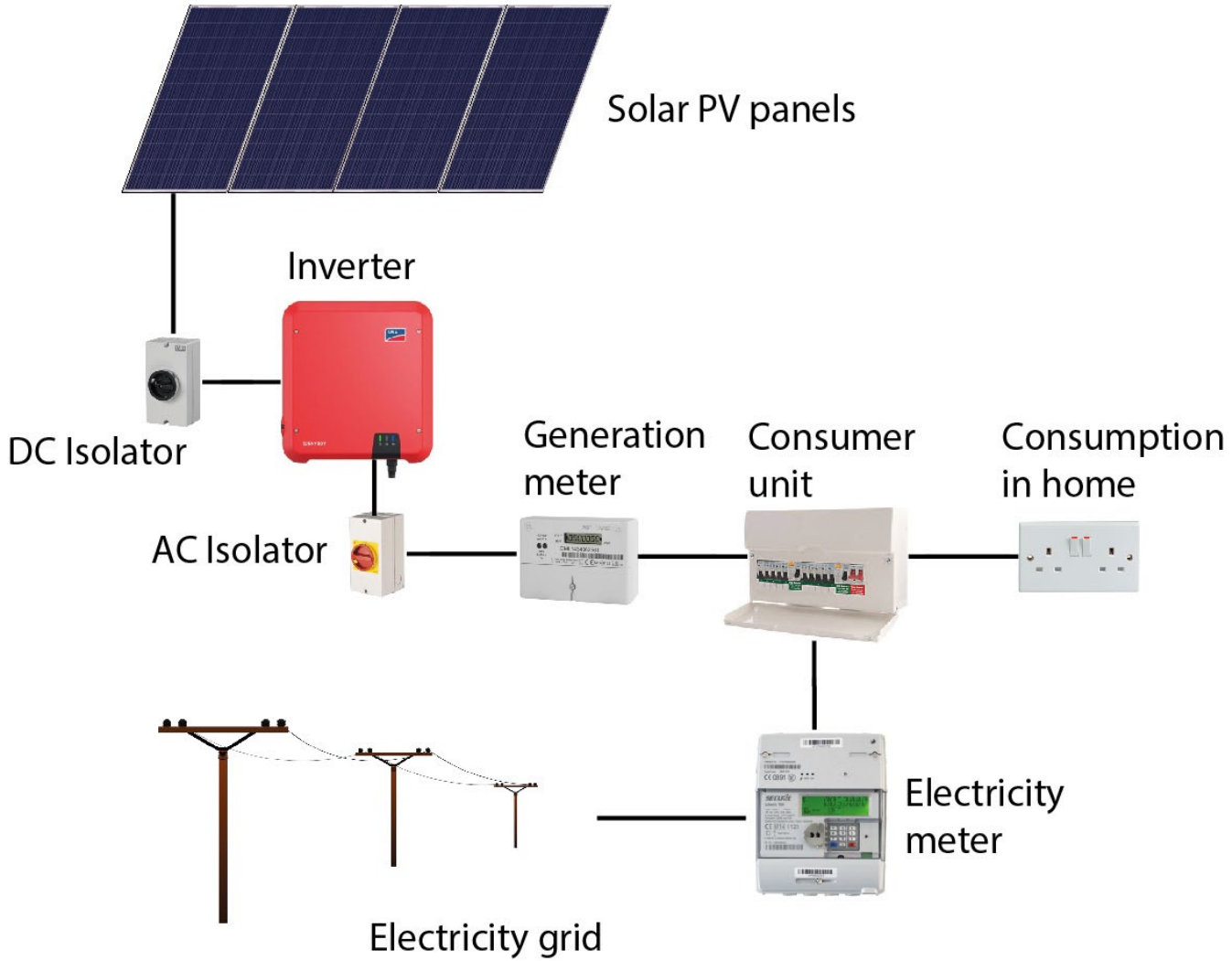
Solar PV and complementary technologies

361 Energy Fair

Presentation overview

- Solar PV
  - Components of a system
  - Factors which affect the level of electricity generation
- Complementary technologies
  - Monitors
  - Solar diverters
  - Battery storage
  - Electric heating

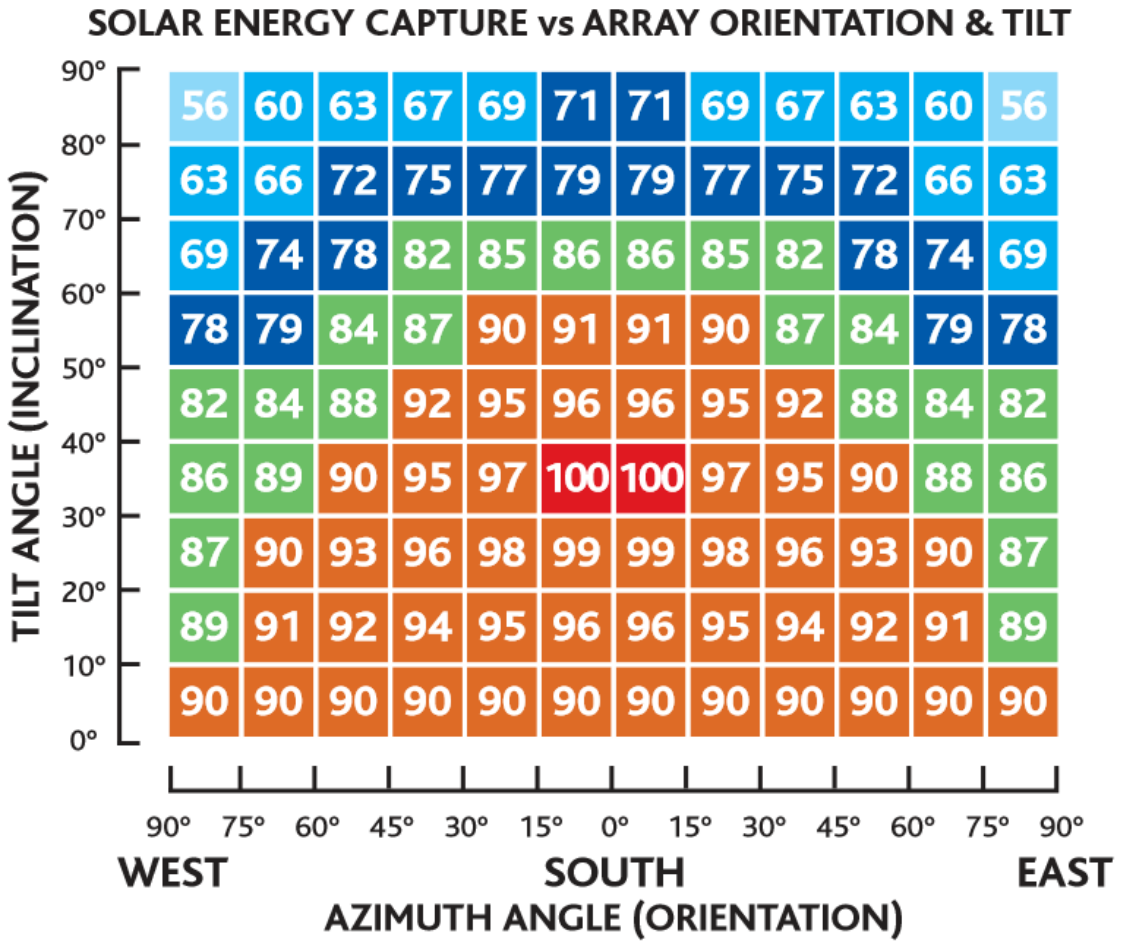
Components of a solar PV system



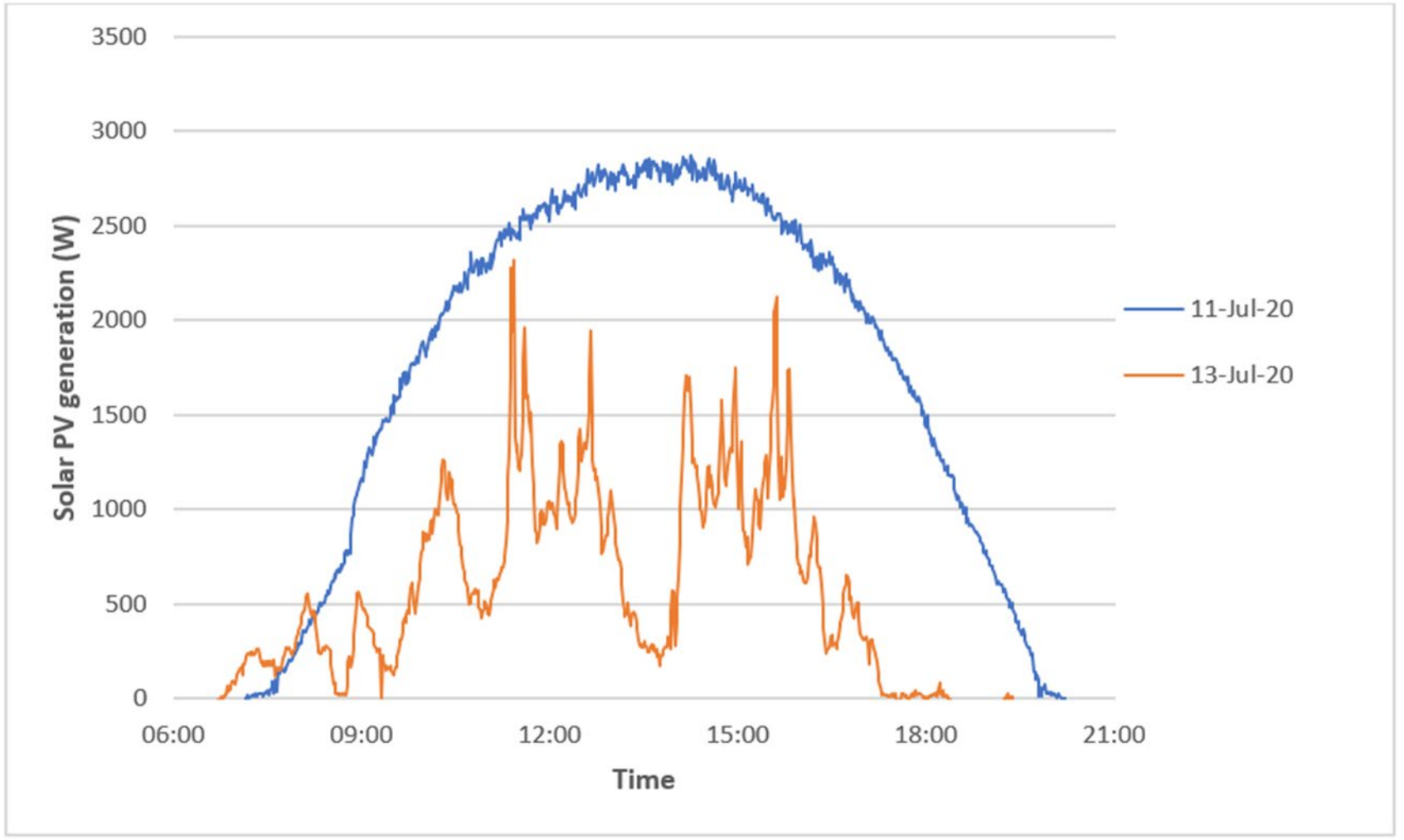
Factors affecting solar PV generation

- Annual PV generation is affected by:
  - Solar PV system size
  - Angle of orientation of the solar panels
  - Angle of inclination of the solar panels
  - Location
  - Level of shading on the roof

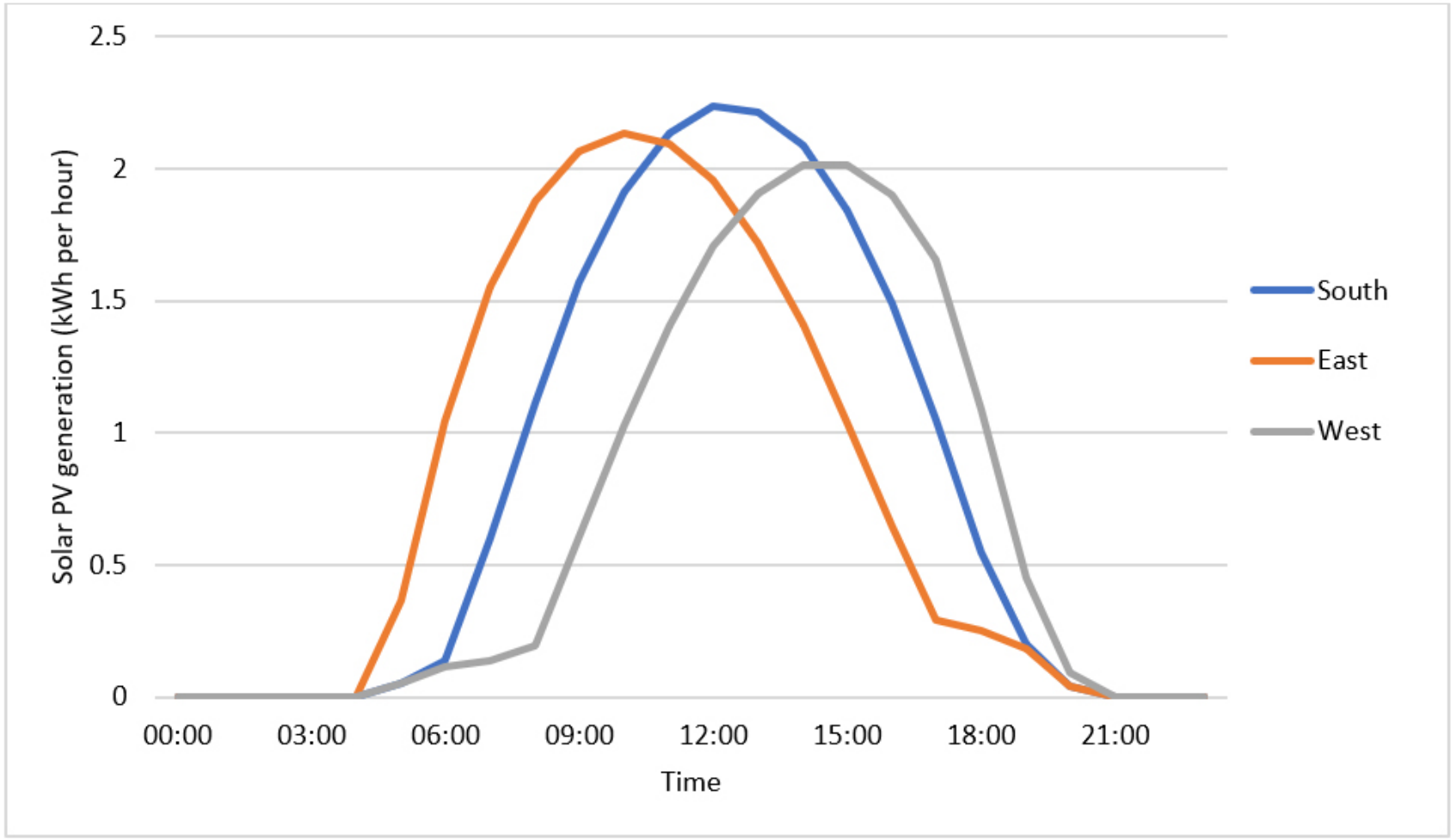
Impact of orientation and inclination



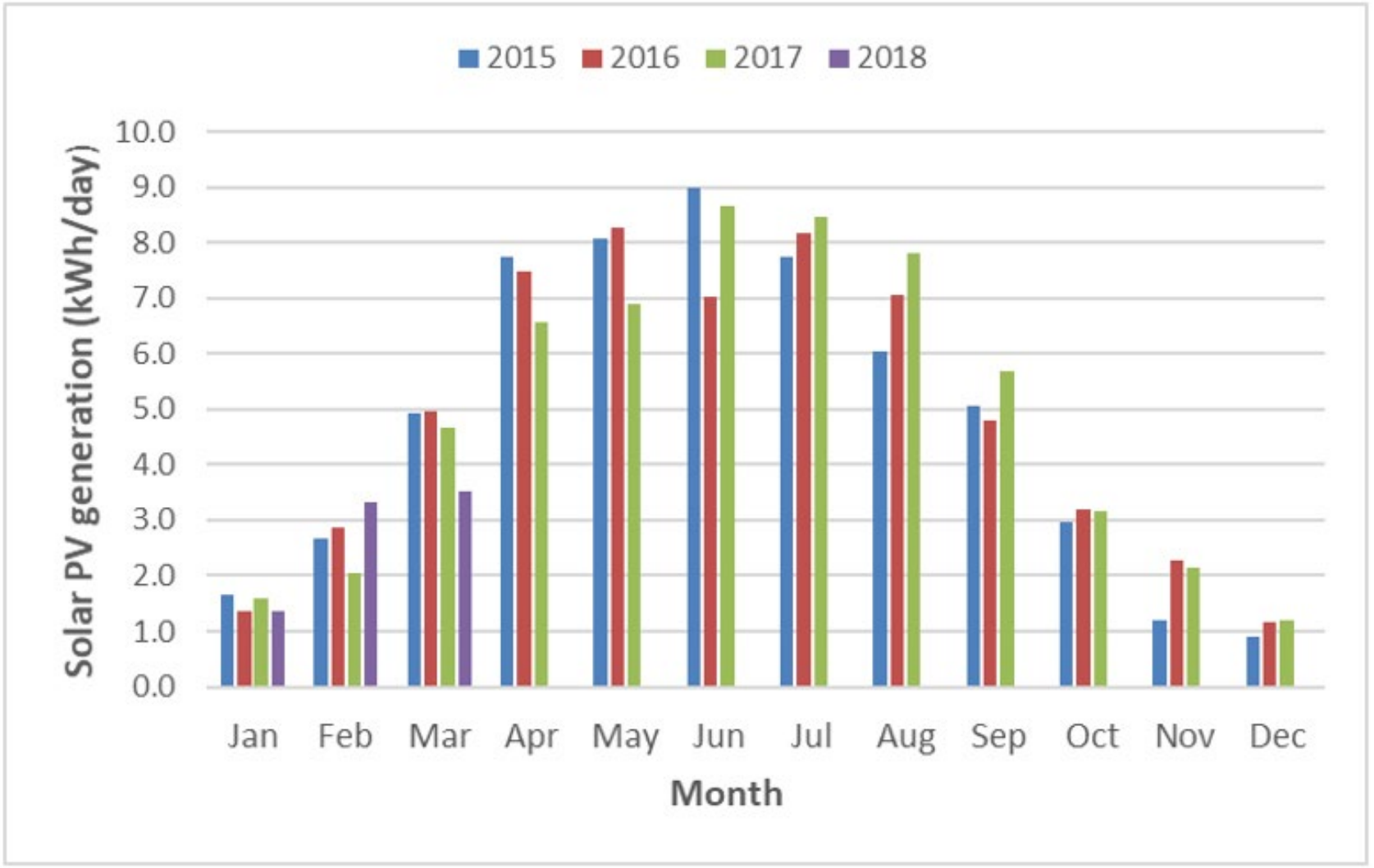
Impact of a sunny or cloudy day



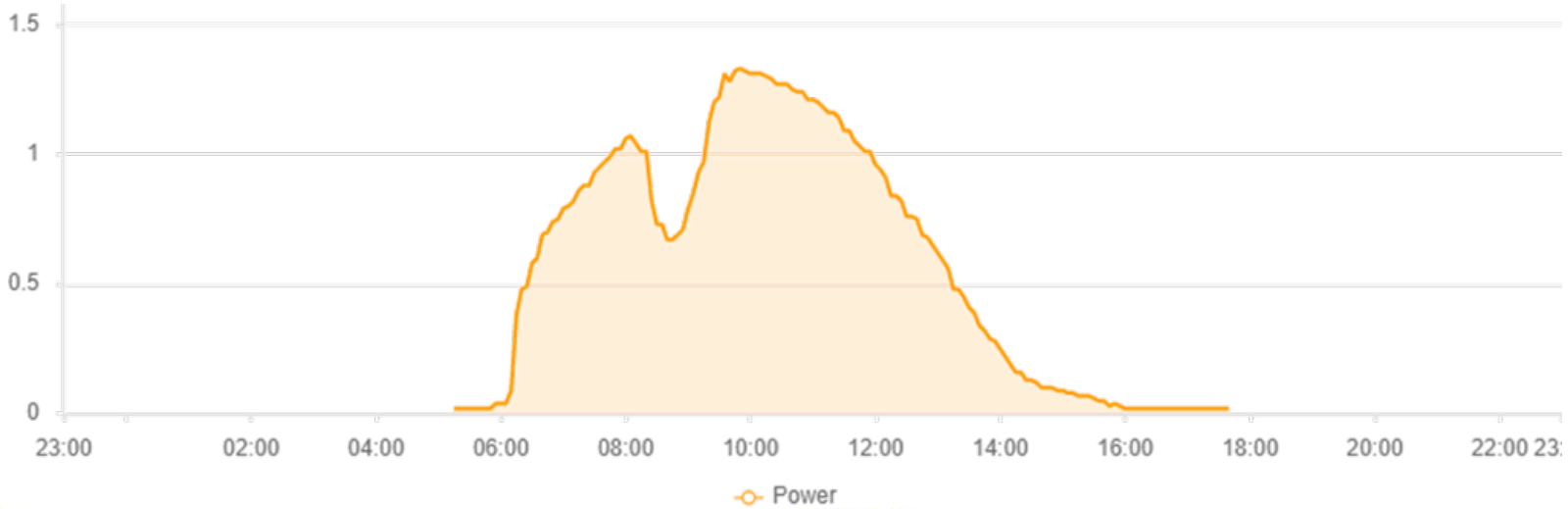
Impact of roof orientation

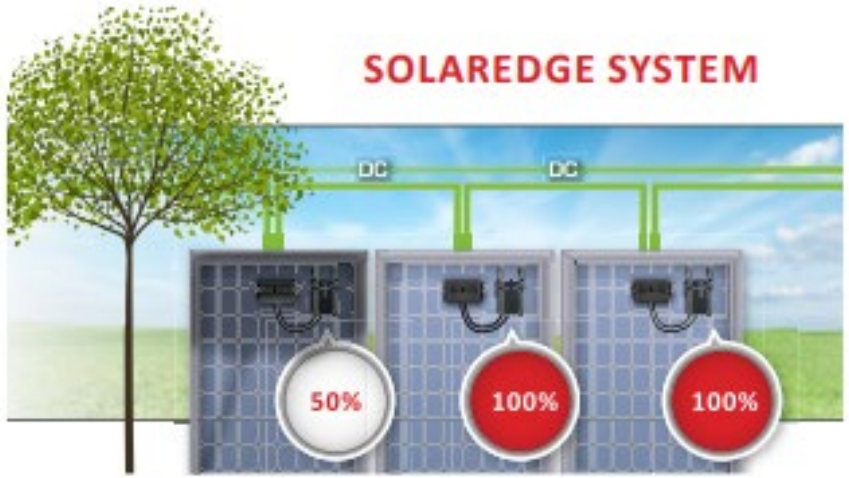


Variation in generation over the year



Impact of shading





Increasing self-consumption of solar PV

- A typical home with a 4kW solar PV system may consume only 25% of the generation over the year

- How do we increase the level of self-consumption?
  - Behaviour change
  - Solar diverters
  - Battery storage
  - Electric heating

Monitors for solar PV

- Chameleon IHD7
- Display shows the level of electricity export to the grid

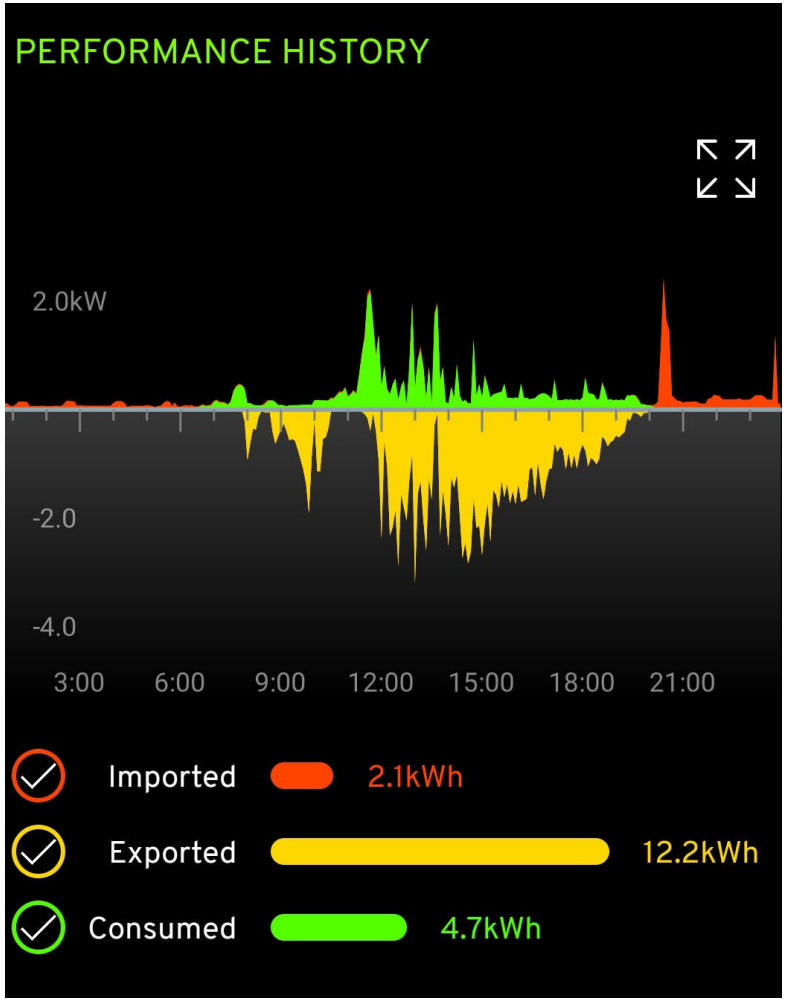
- Connect dongle to the inverter and home WiFi
- Monitor generation with a smart phone app

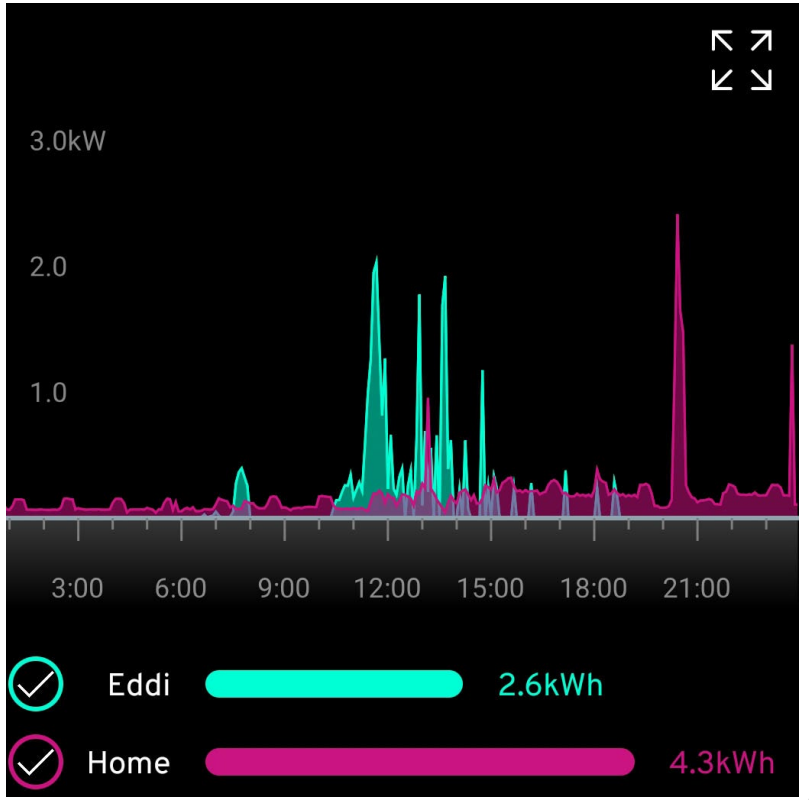
Complementary technologies: solar diverters

- Marlec Solar iBoost
- Uses excess solar to heat water
- Needs a hot water cylinder

- iBoost Buddy monitor
- Does not need WiFi

Complementary technologies: solar diverters





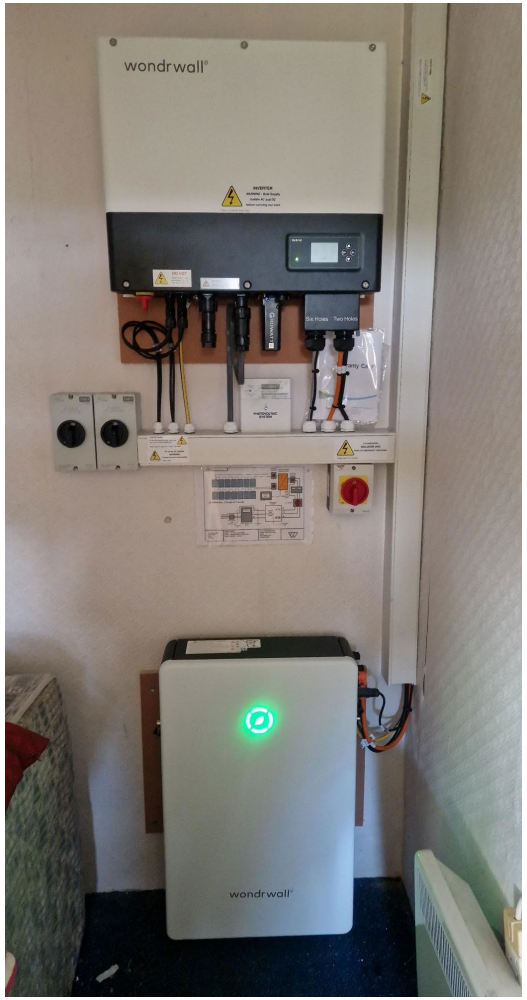
Complementary technologies: Mixergy cylinder

- Mixergy smart hot water cylinder
- Phone app with WiFi connection
- Can include solar diverter

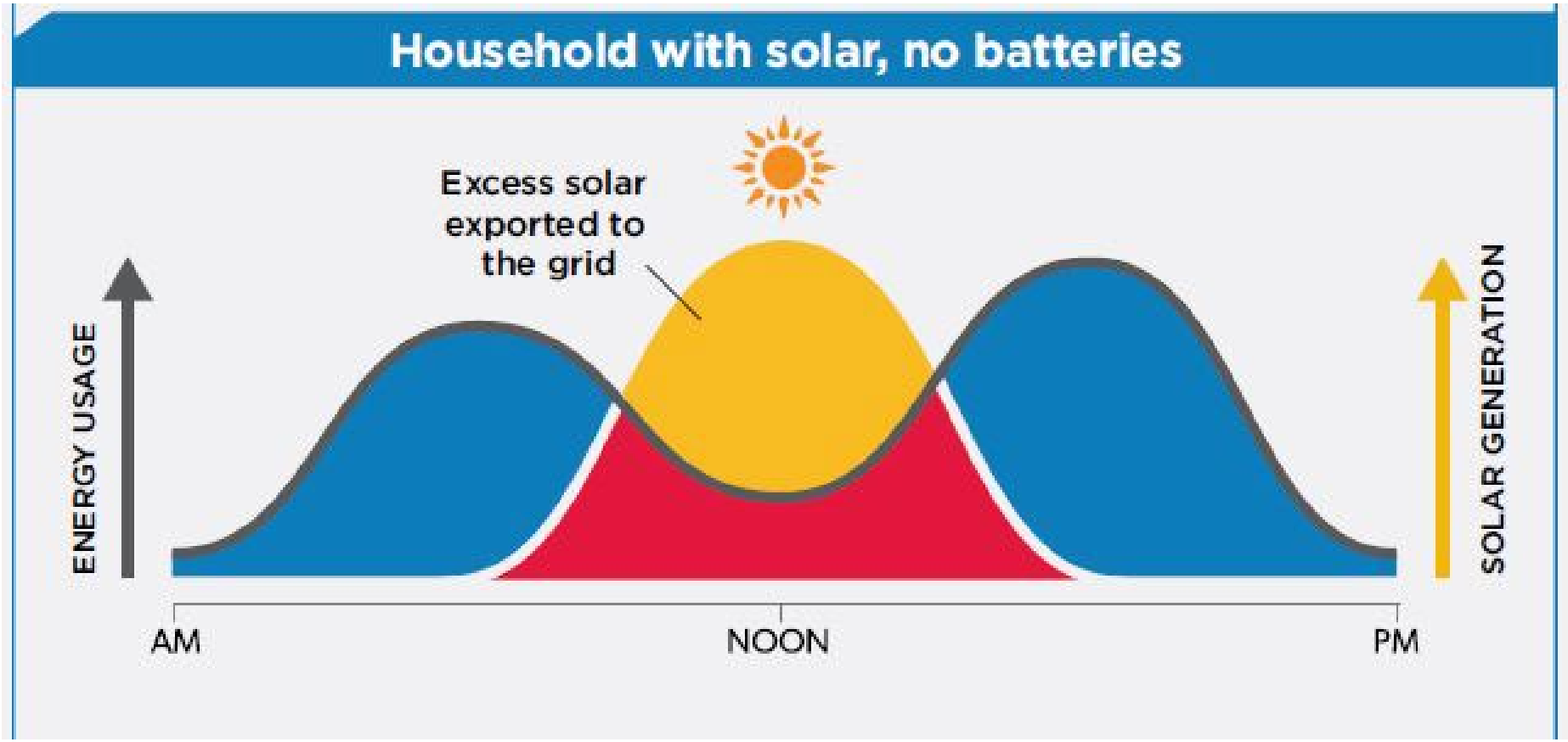
Complementary technologies: EV charger

- Myenergi zappi EV charger
- Can also work as solar diverter

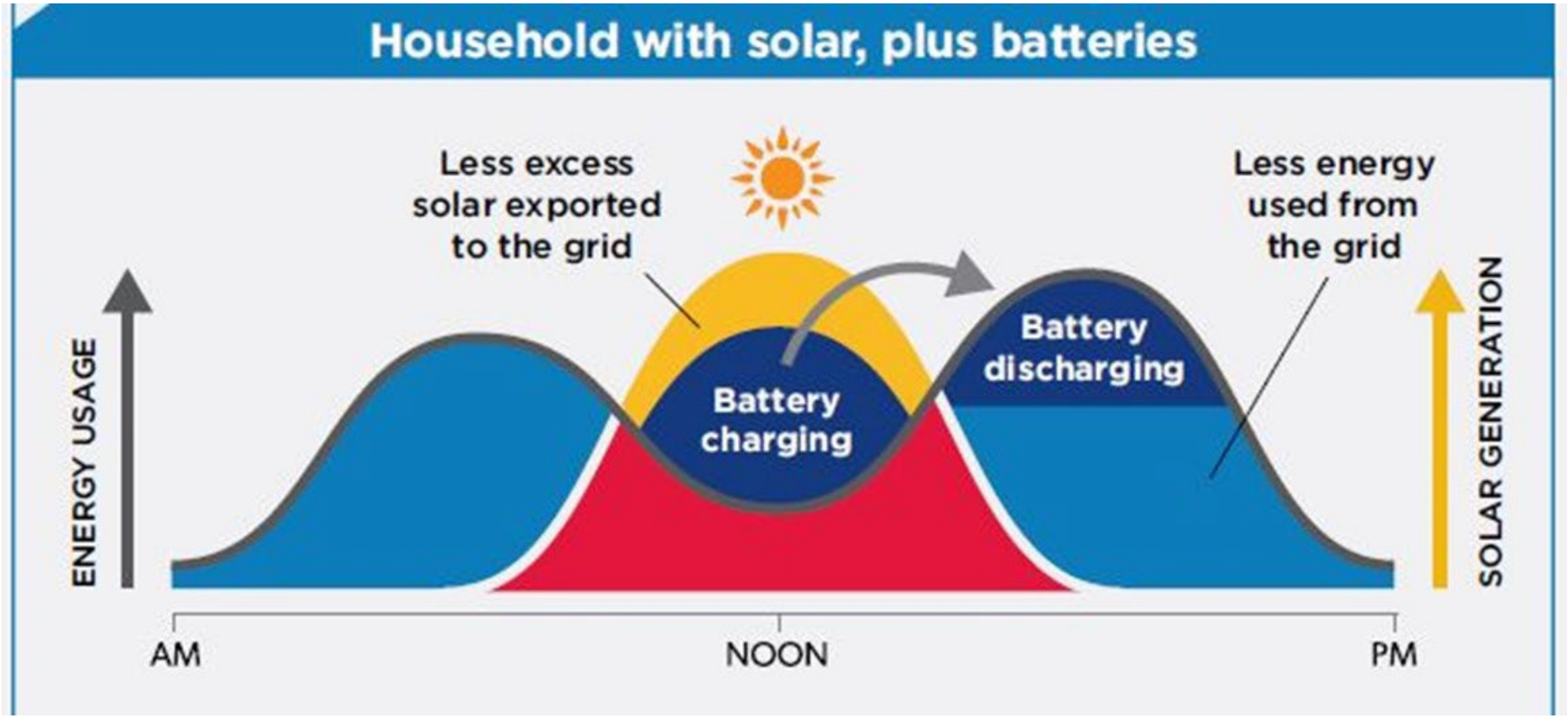
Complementary technologies: Battery storage



Complementary technologies: Battery storage



Complementary technologies: Battery storage



Complementary technologies: ASHP

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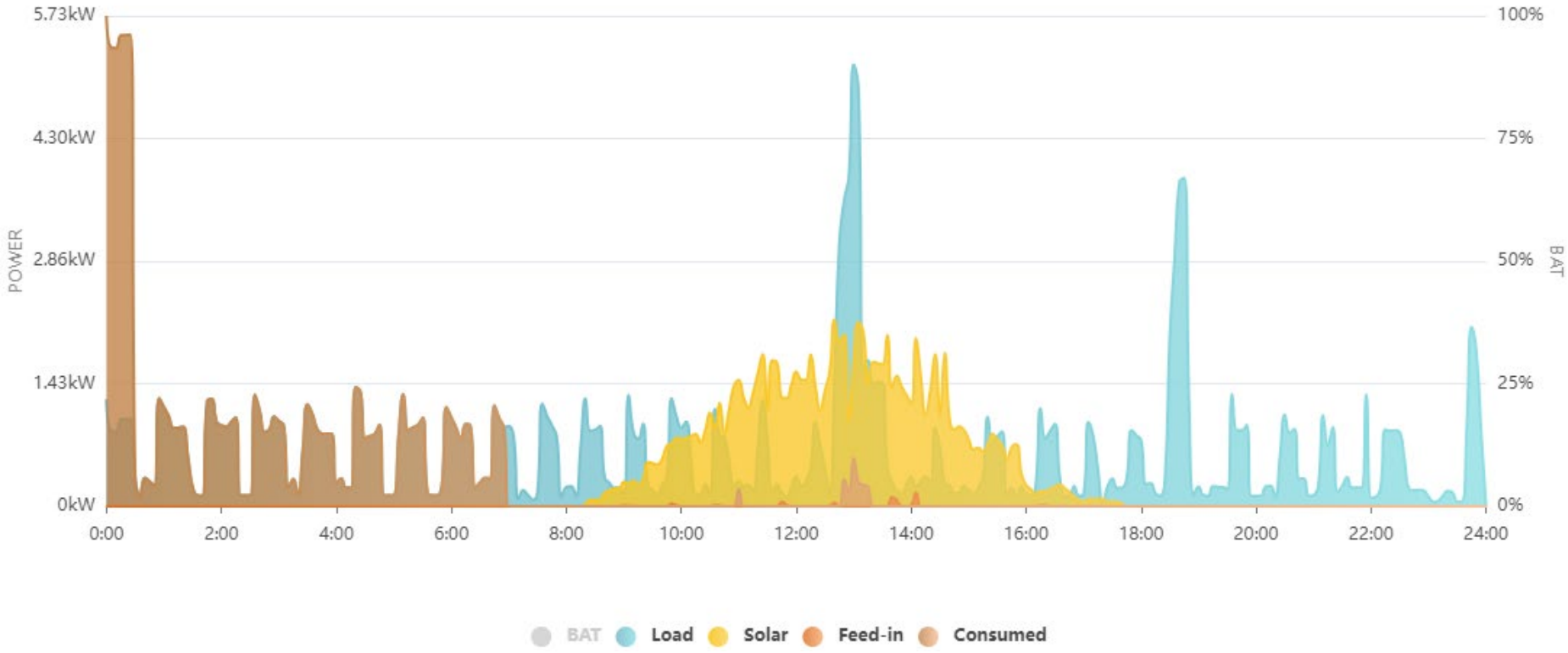
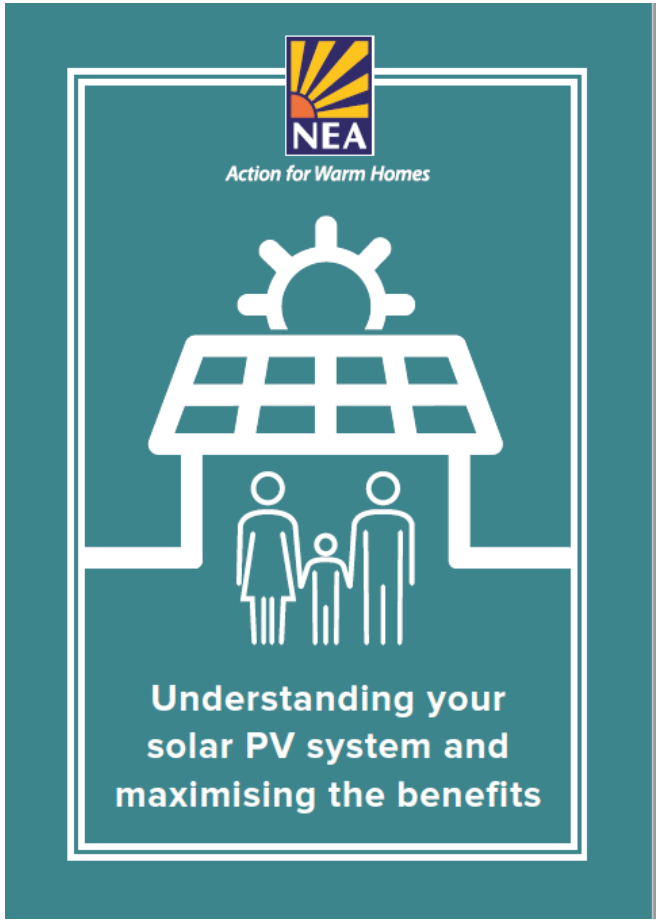
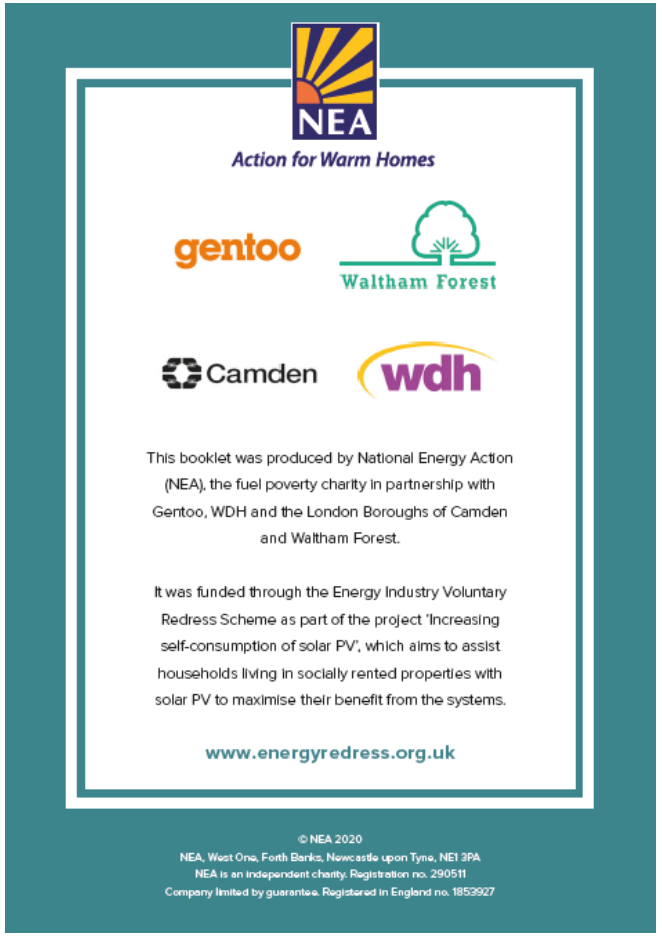


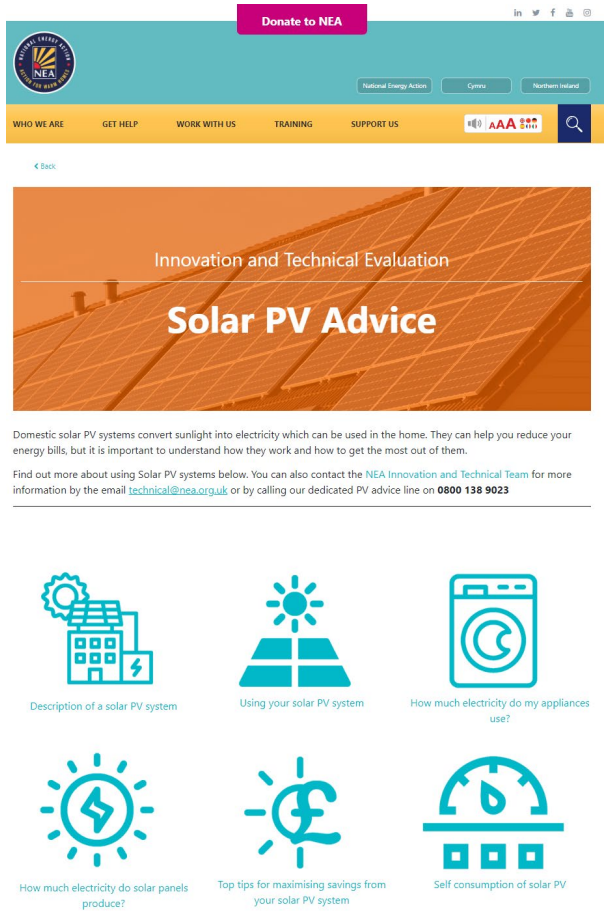
Greater savings in Spring and Autumn – example from 23 Oct 23

NEA solar PV advice leaflet





NEA solar PV advice leaflet



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https://www.nea.org.uk/who-we-are/innovation-technical-evaluation/solarpv/

Thank you for listening

Any questions?

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