

Nowcasting of PV Power Feed-in

- High Availability
- Self-consumption

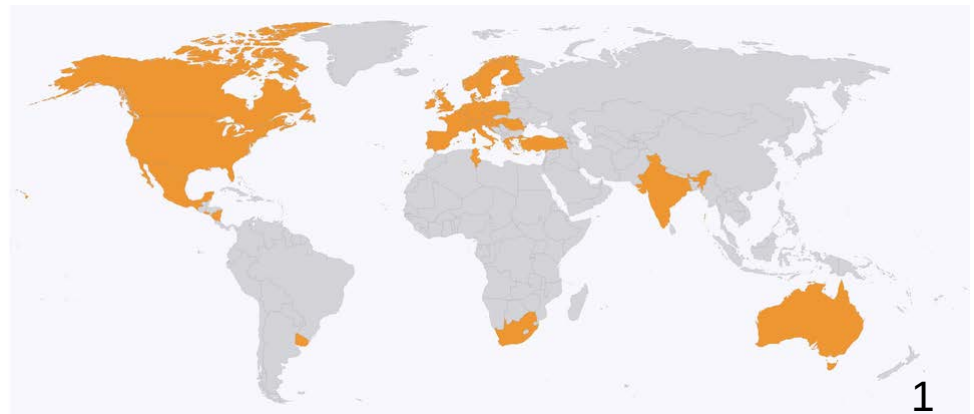
Dr. Heidrun Misfeld

Solar Integration Workshop 2017

Berlin, 24. October 2017

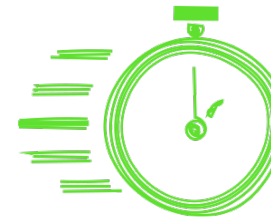
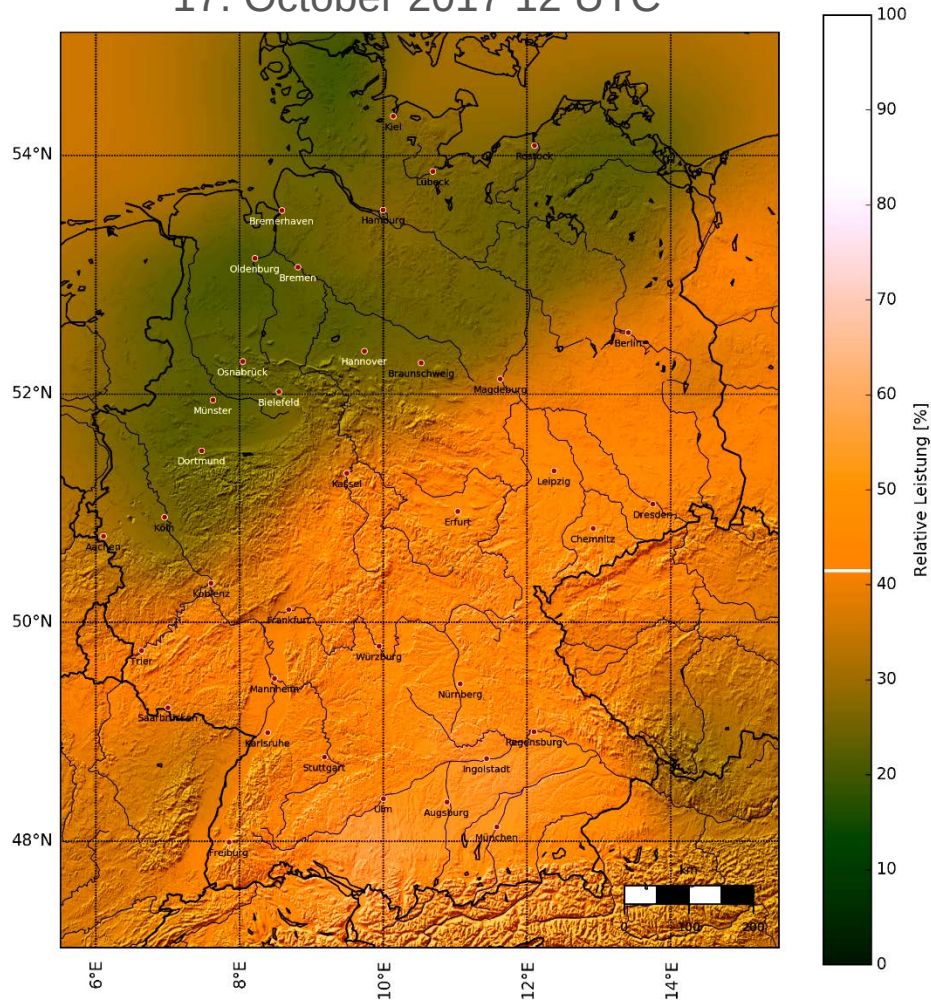
Company Profile

- Integration of renewables into grids and markets
- Service provider for energy meteorology since 2004
- Areas of business
 - wind and solar power predictions and nowcasting
 - software for virtual power plants and demand side management
 - industry projects, national and international research projects
- Customers
 - grid operators
 - direct marketers / traders
- 80 people

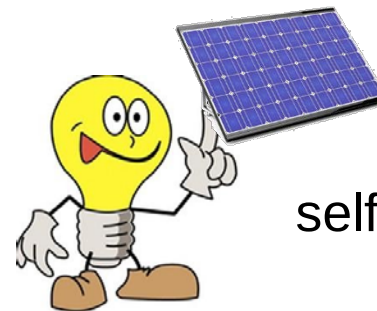


Nowcasting of PV power feed-in

17. October 2017 12 UTC



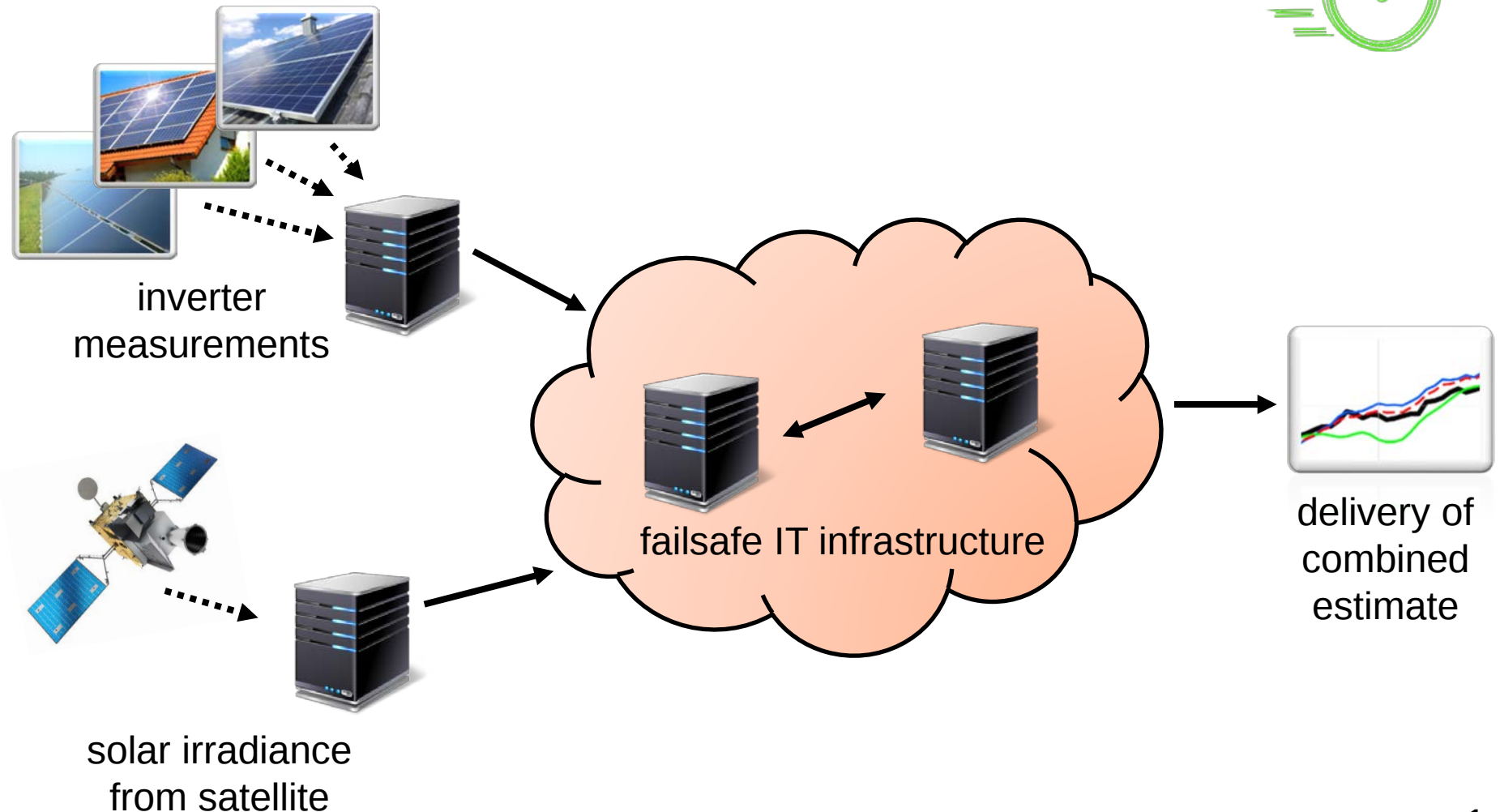
high availability



self-consumption



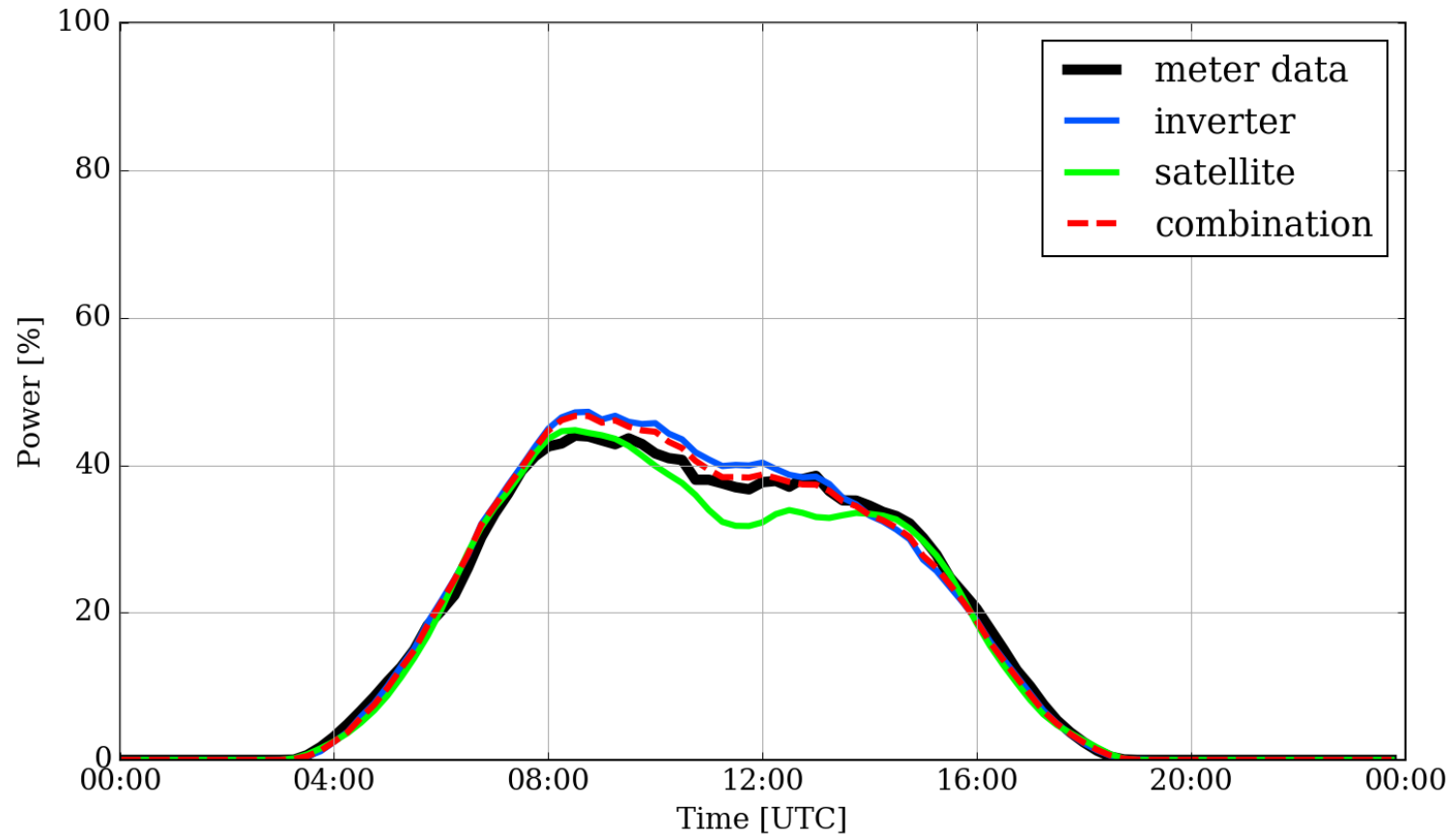
High availability of PV power nowcasting





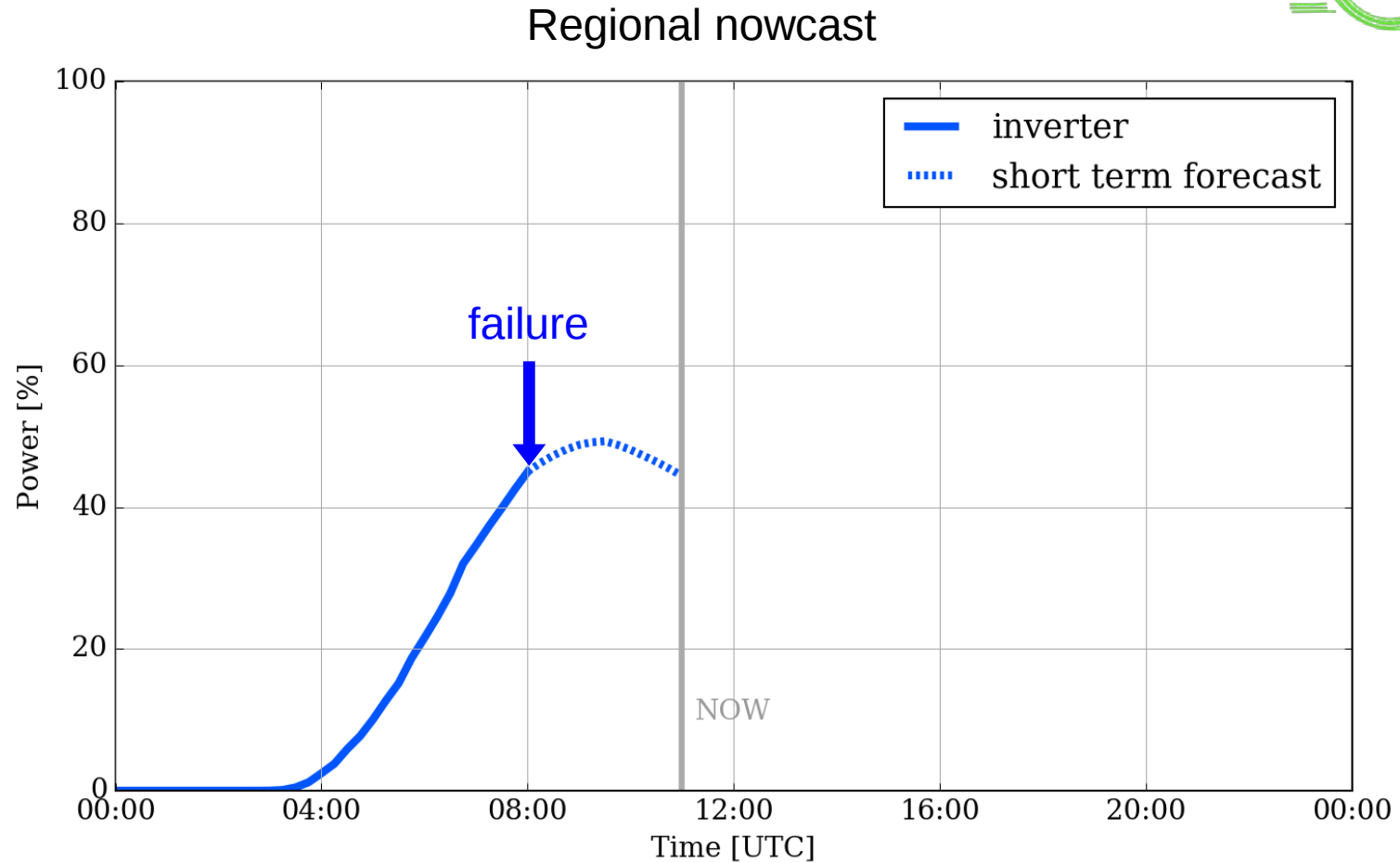
Combination of PV power estimates

Regional nowcast



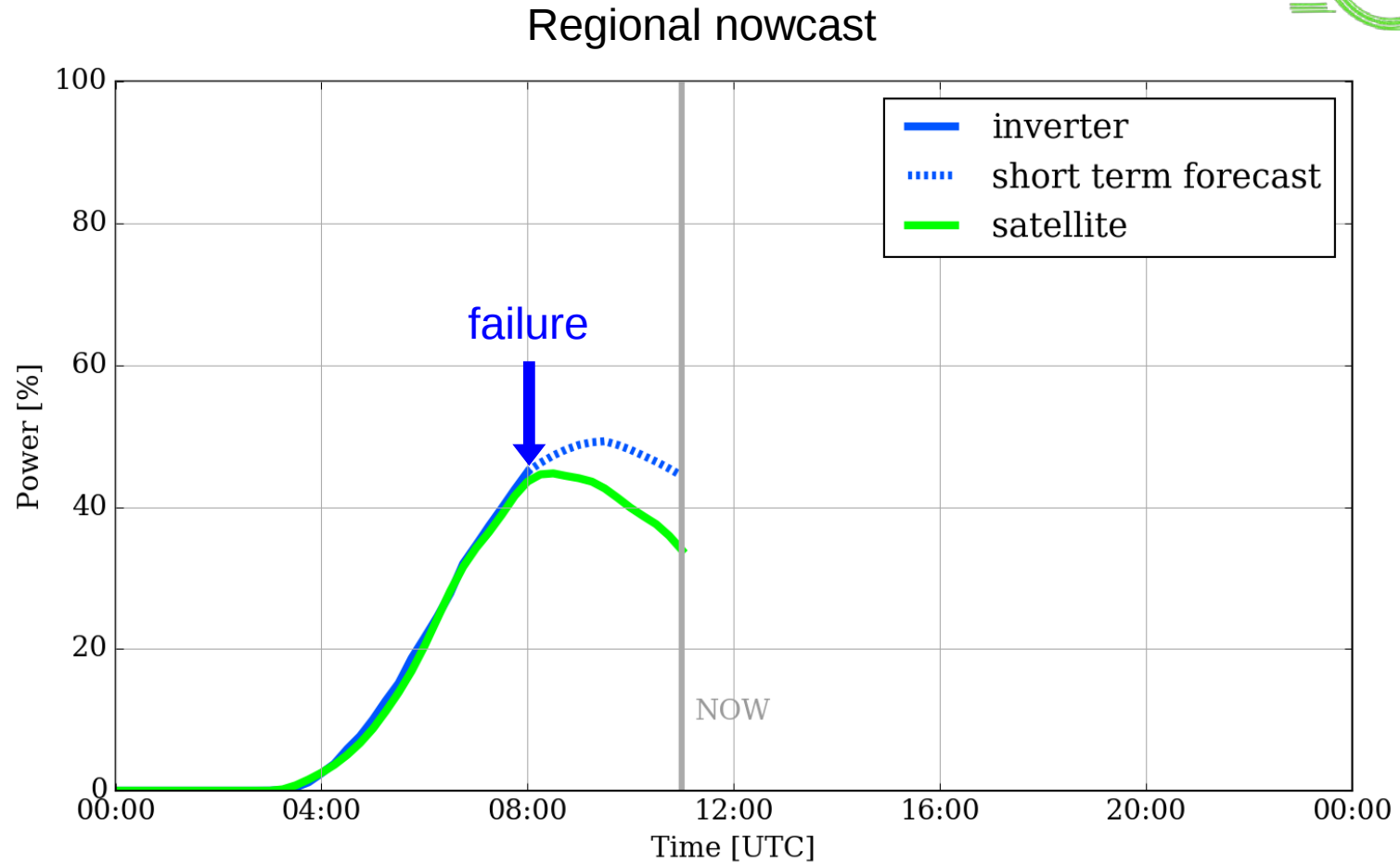


Combination of PV power estimates



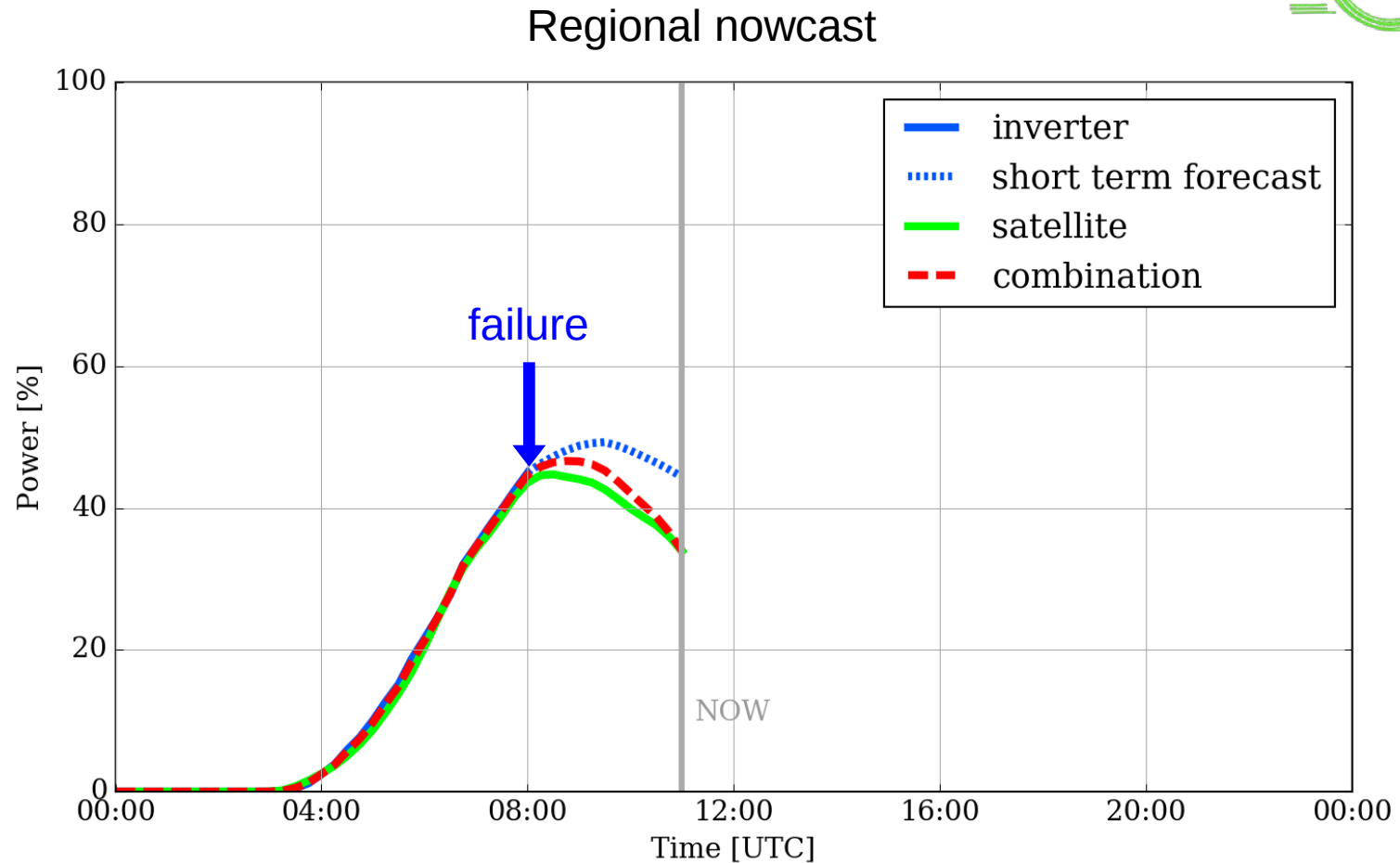


Combination of PV power estimates



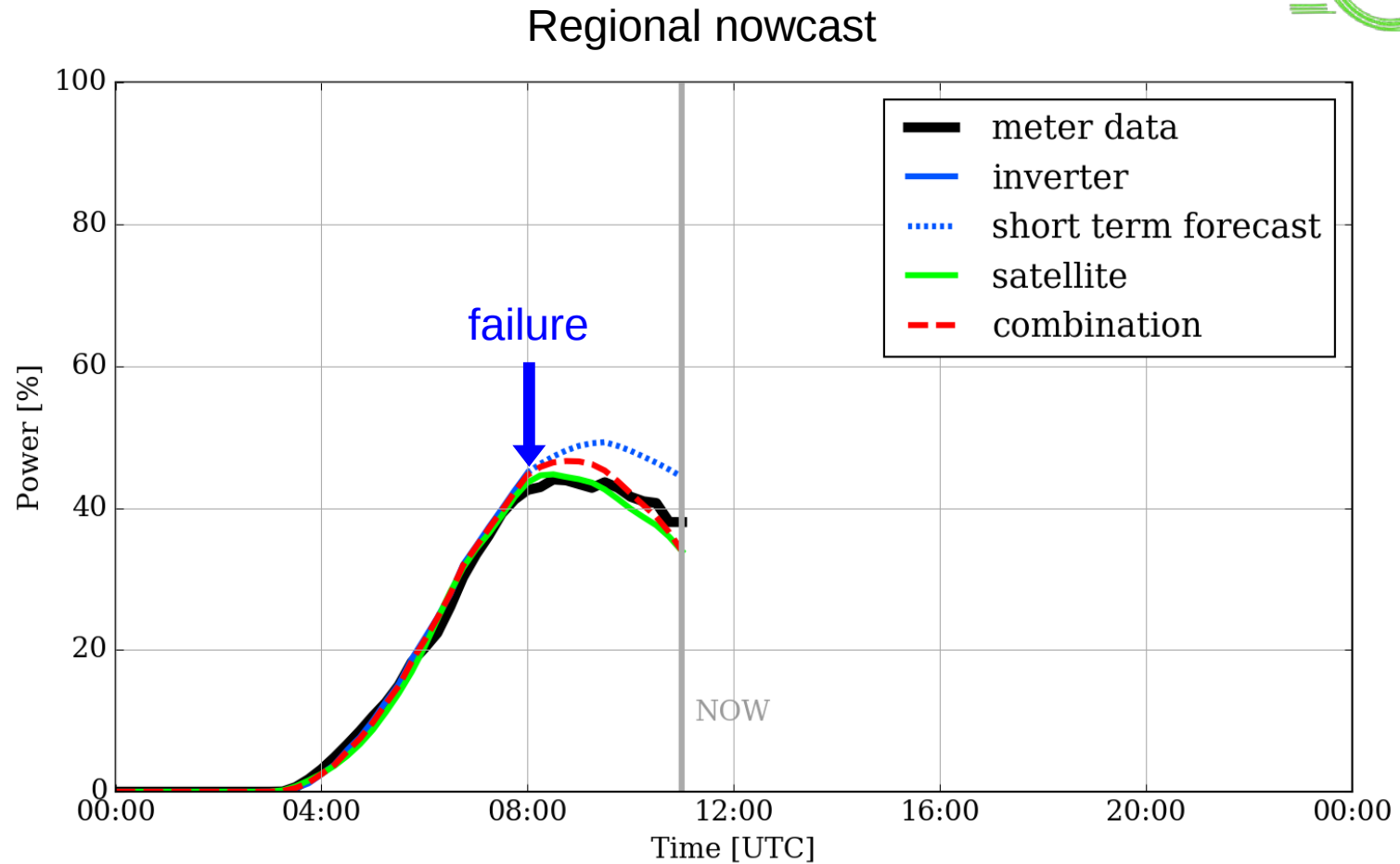


Combination of PV power estimates

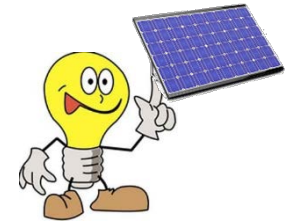




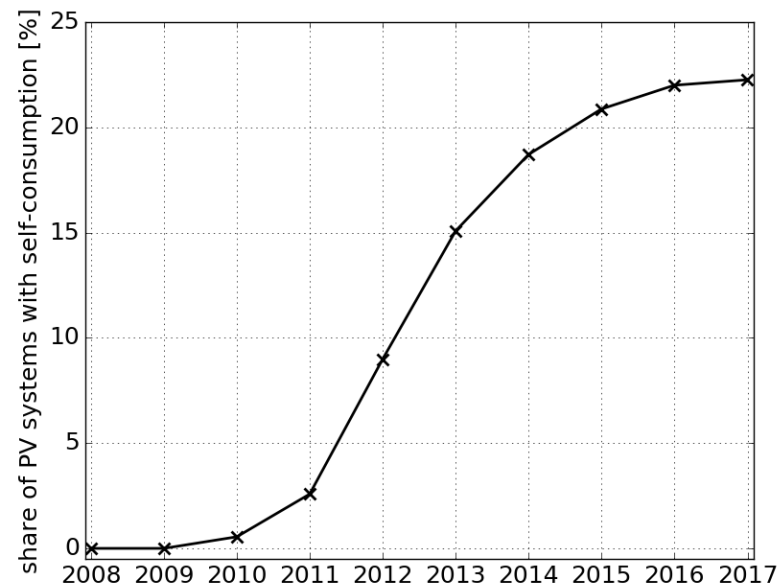
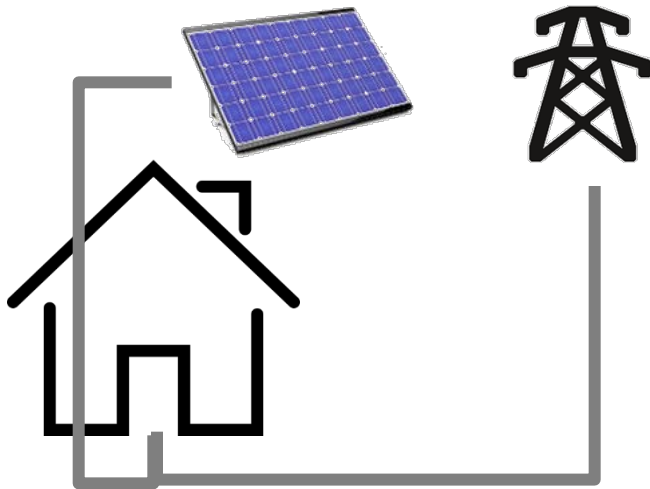
Combination of PV power estimates



PV Power feed-in

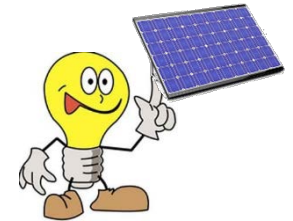


- power feed-in = power generation – self-consumption

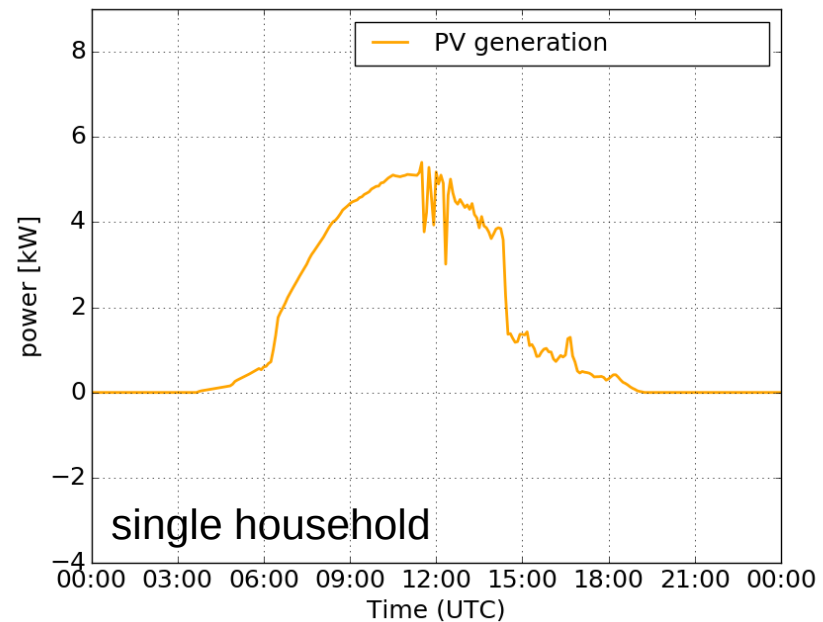
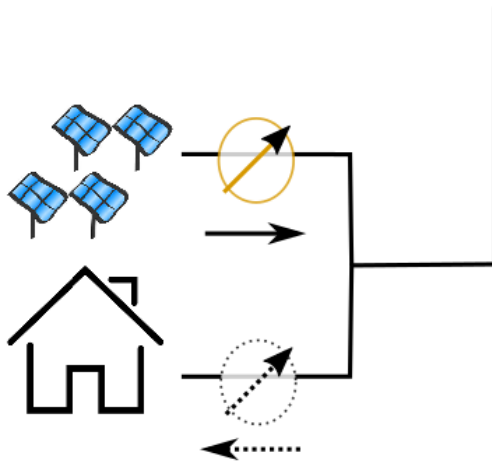


modelling share of PV systems with self-consumption
for classes of different system sizes

Self-consumption modelling

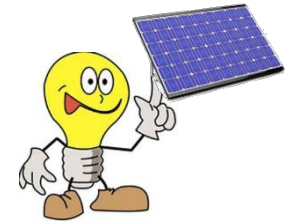


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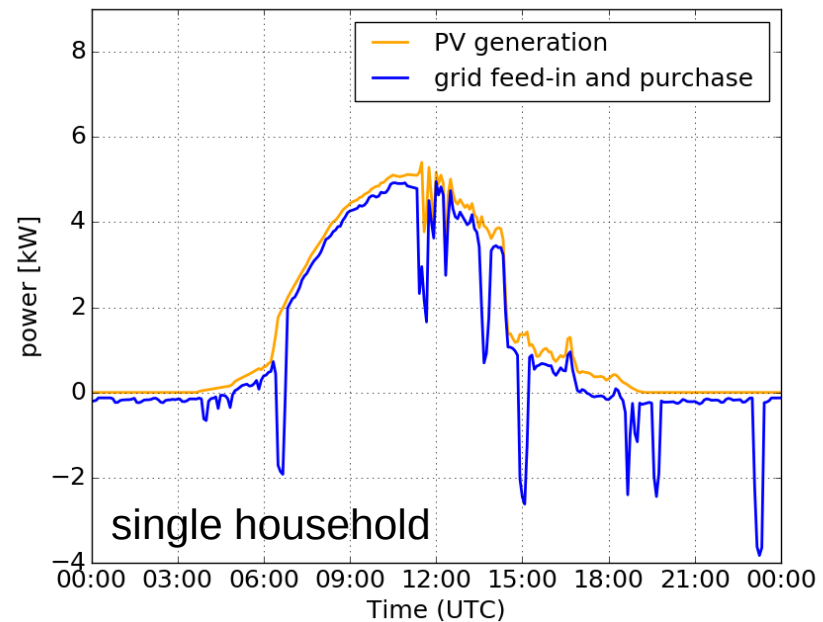
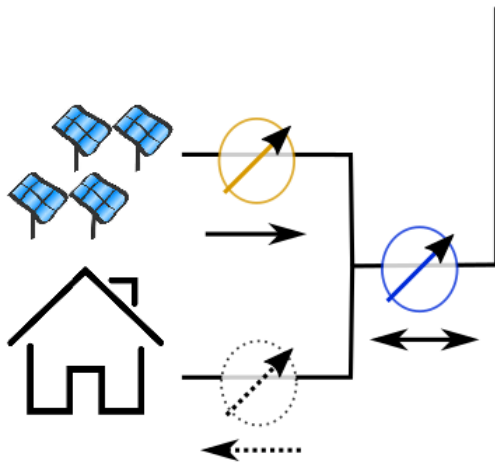


- measurements of PV generation and feed-in

Self-consumption modelling

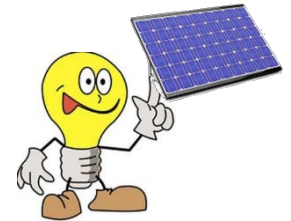


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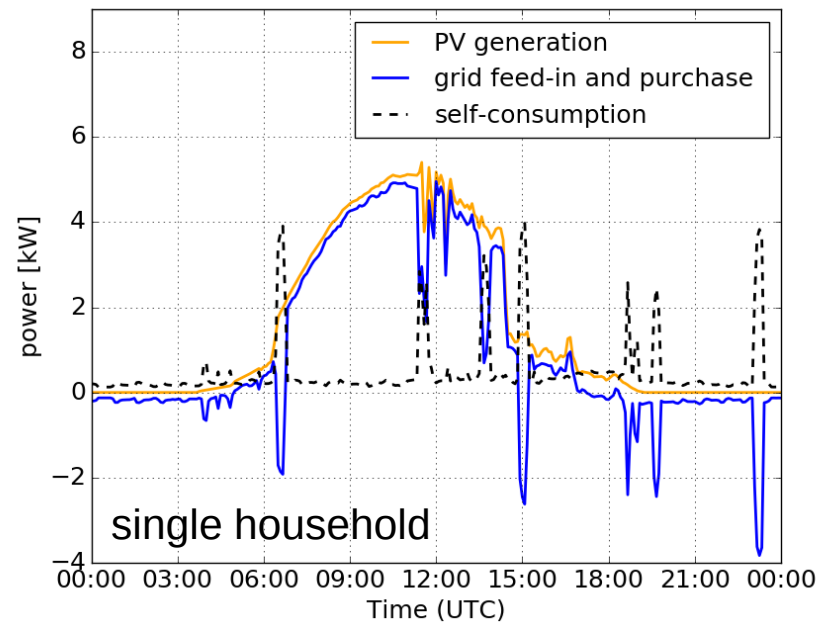
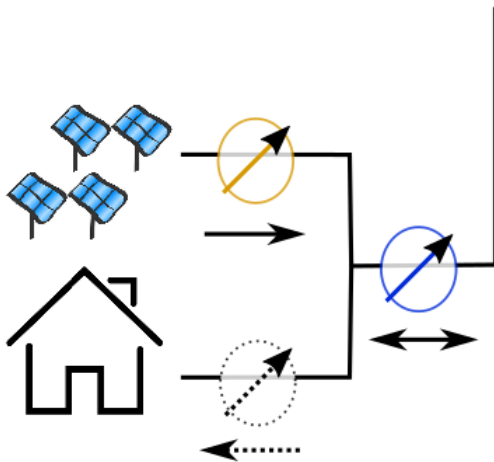


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Self-consumption modelling

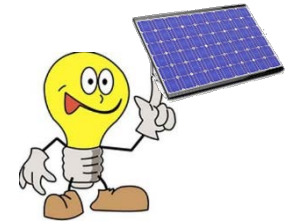


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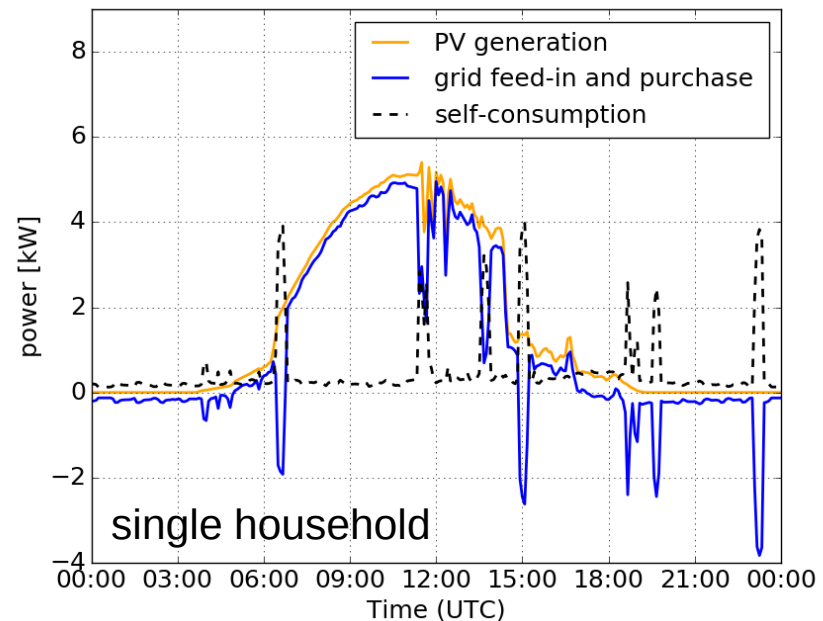
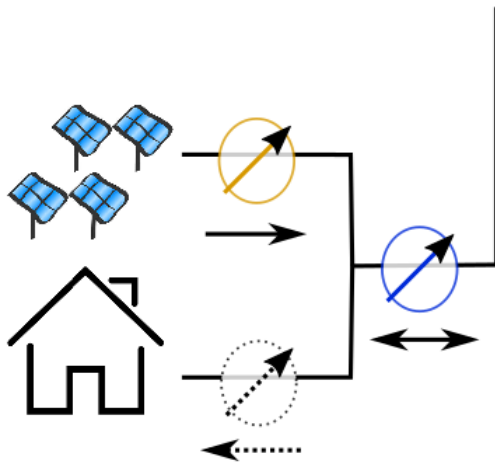


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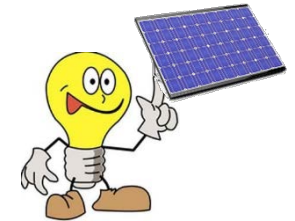
Self-consumption modelling



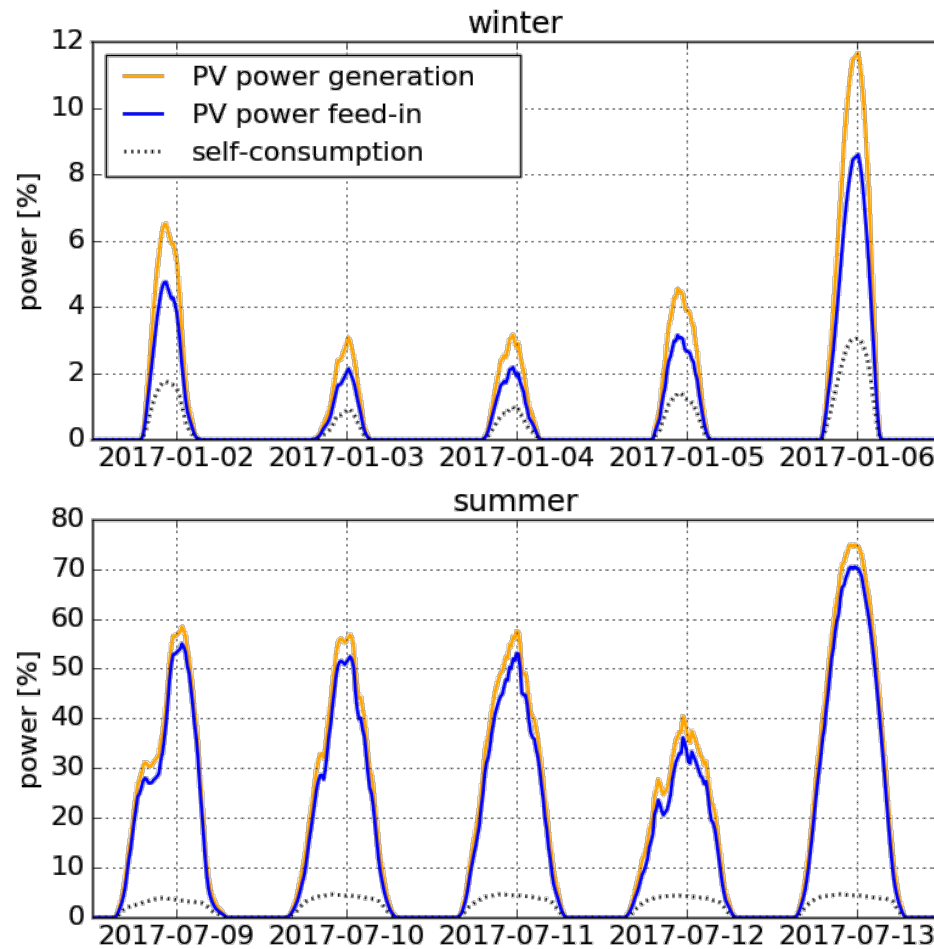
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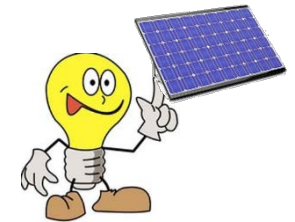
- measurements of PV generation and feed-in
- load profiles with diurnal and seasonal patterns for classes of different system sizes



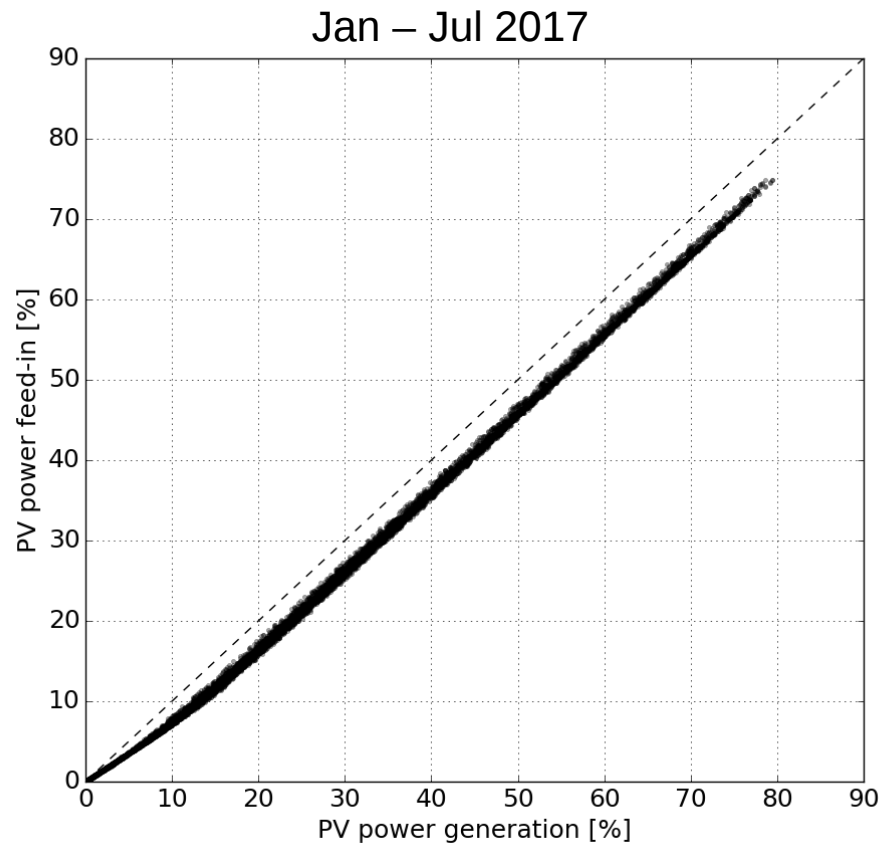
PV Power feed-in with self-consumption



regional nowcast



PV Power feed-in with self-consumption



regional nowcast including plants
with and without self-consumption

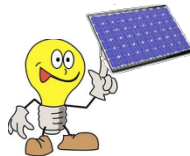
Summary

Nowcasting of PV power



- increased availability by using independent data sources
- higher data quality due to combination

Self-consumption



- increasing share of self-consumption
- correct representation based on non-generic load profiles
 - diurnal and annual patterns
 - different plant sizes

Thank you for your attention!

Dr. Heidrun Misfeld
heidrun.misfeld@energymeteo.de

