Overcoming solar distribution network challenges

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Solar Performance Mapping and Operational Yield Forecasting

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Project Overview

• A collaborative project led by the BRE National Solar Centre, partnering with Met Office and Exeter University.

• This project will use meteorological and satellite data from the Met Office in combination with electricity generation data from UK wide solar photovoltaic (PV) installations from the NSC to develop:
  • accurate geographical representations of solar generation across the UK (performance mapping)
  • short term forecasting of UK radiation levels and solar generation from utility scale solar plants (operational yield forecasting).

• The project will combine environmental data sets with recent UK solar generation data to enable these services.
Solar Performance Mapping

- Current performance mapping outputs available to the industry use differing data sets, some contain old data and are lacking in granularity. Therefore estimates of solar resource differ widely.

- Most of the industry is seeing better performance of panels in comparison with estimates of resource.

- This project will use live generation data from solar parks and roofs in a number of regions to compare with estimates of solar radiation derived from observations, models and satellites.

- The project will provide information about accuracy of existing datasets and potentially new mapping methodology.
Solar Performance Mapping

[Map showing solar performance data locations]
Operational Yield Forecasting

- Existing numerical weather prediction models include radiation modelling but are not tuned well to fit with solar industry needs.

- Accurate short term solar forecasting is becoming of increasing importance for accurate yield estimate and prediction.

- This project will aim to develop accurate solar forecasts by using numerical weather prediction models to produce accurate solar generation forecasts. Live solar panel data will be used in conjunction with the forecast information to produce predictions in the 0-36 hour range.

- Improved numerical weather prediction outputs will be beneficial to all providers of forecast information.

- Trial forecasts will be made available to project participants for the duration of the project.
Operational Yield Forecasting

Global
- 25km 70 Levels
- 48hr forecast twice/day
- 144hr forecast twice/day

Euro4
- 4km 70 Levels
- 60hr forecast twice/day
- 120hr forecast twice/day

UKV
- 1.5km 70 Levels
- 36hr forecast eight times/day
Operational Yield Forecasting

With Met Office and University of Exeter

IEA PVPS (2013) Photovoltaic and Solar Forecasting: State of the Art
Next Steps . . .

• Project will run for 12 months until June 2015.

• More project partners are invited to join:
  
  • Partners are sought with solar assets, either farms, or rooftop generation sites.
  
  • Historic and live panel data are required from partners for the project.
  
  • Project partners have the opportunity to receive trial forecasts for the project duration and input feedback into the project.
  
  • The project is also collecting needs from all participants in the solar industry.

For more information please come and talk to us on the NSC stand.
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