

Using AI for Operational Forecast Production

Lars Rohwer
Forecasting and Meteorology in Power Systems Workshop
June 15, 2026

- Headquarters in Oldenburg, Germany
- Approx. 250 employees
- Operations on all continents
- Over 20 years of experience
- Approximately 1 TW forecasted installed capacity for solar and wind energy



emsys grid
services

- Grid Operation
- Network Platform

energy & meteo
systems

- Wind & Solar Forecasts
- Consulting

emsys vpp

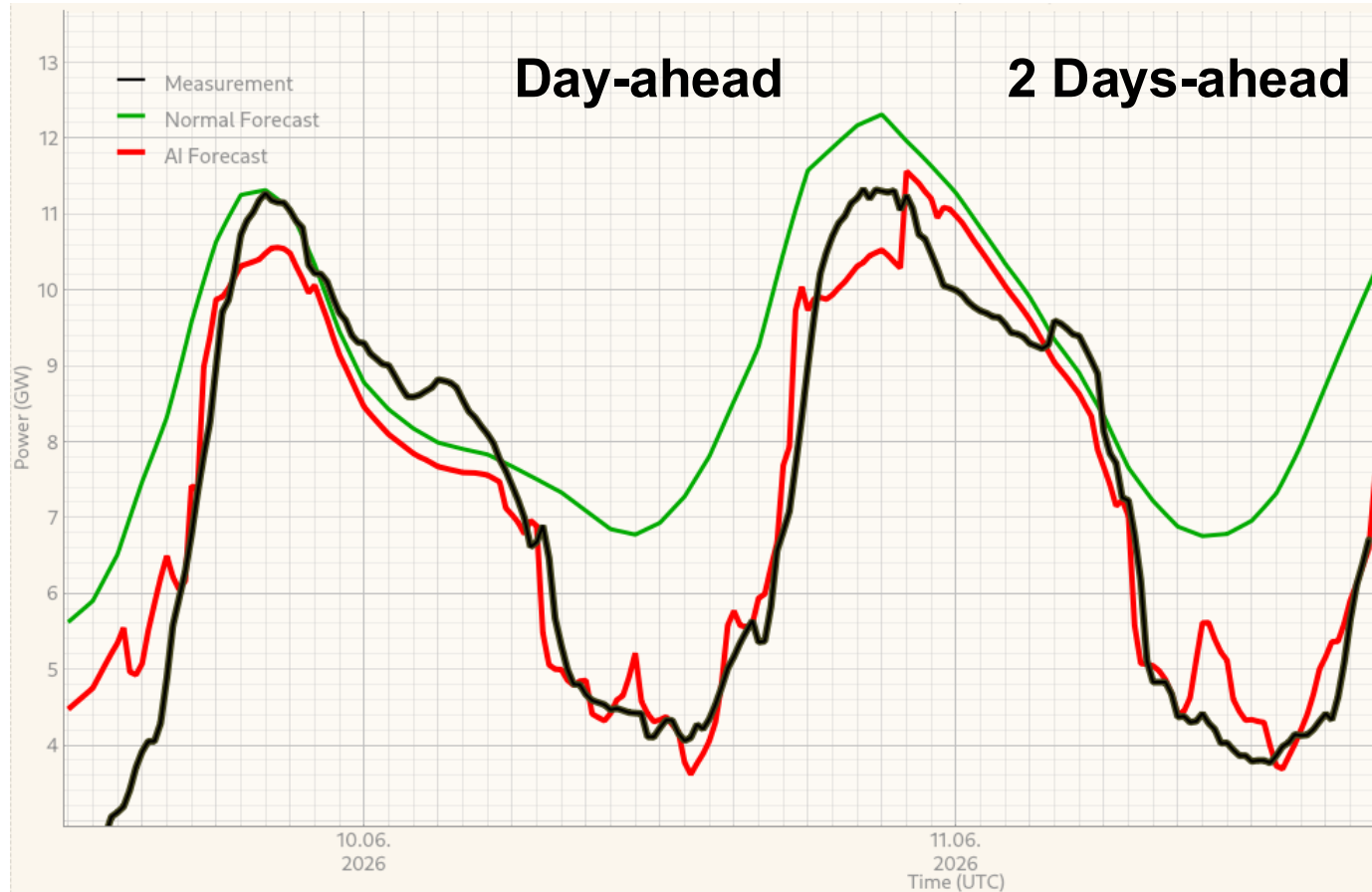
- Virtual Power Plant
- Balancing Power Services

- The terms “AI” and “Forecast” often link to AI weather models as an alternative to NWP models
- Relevant parameters and a sufficient resolution (temporal and spatial) are still missing
- emsys is collecting data and evaluating options for effective operational integration
- In the future, the rapid availability of AI weather model forecasts can be an advantage
- Study led by Karlsruhe Institute of Technology and University of Geneva reveals limitations of AI-based weather forecasts for record-breaking storms, heat waves, and cold waves:

Physics-based models outperform AI weather forecasts of record-breaking extremes

About the study: <https://www.science.org/doi/10.1126/sciadv.aec1433>

AI – Prediction of curtailments

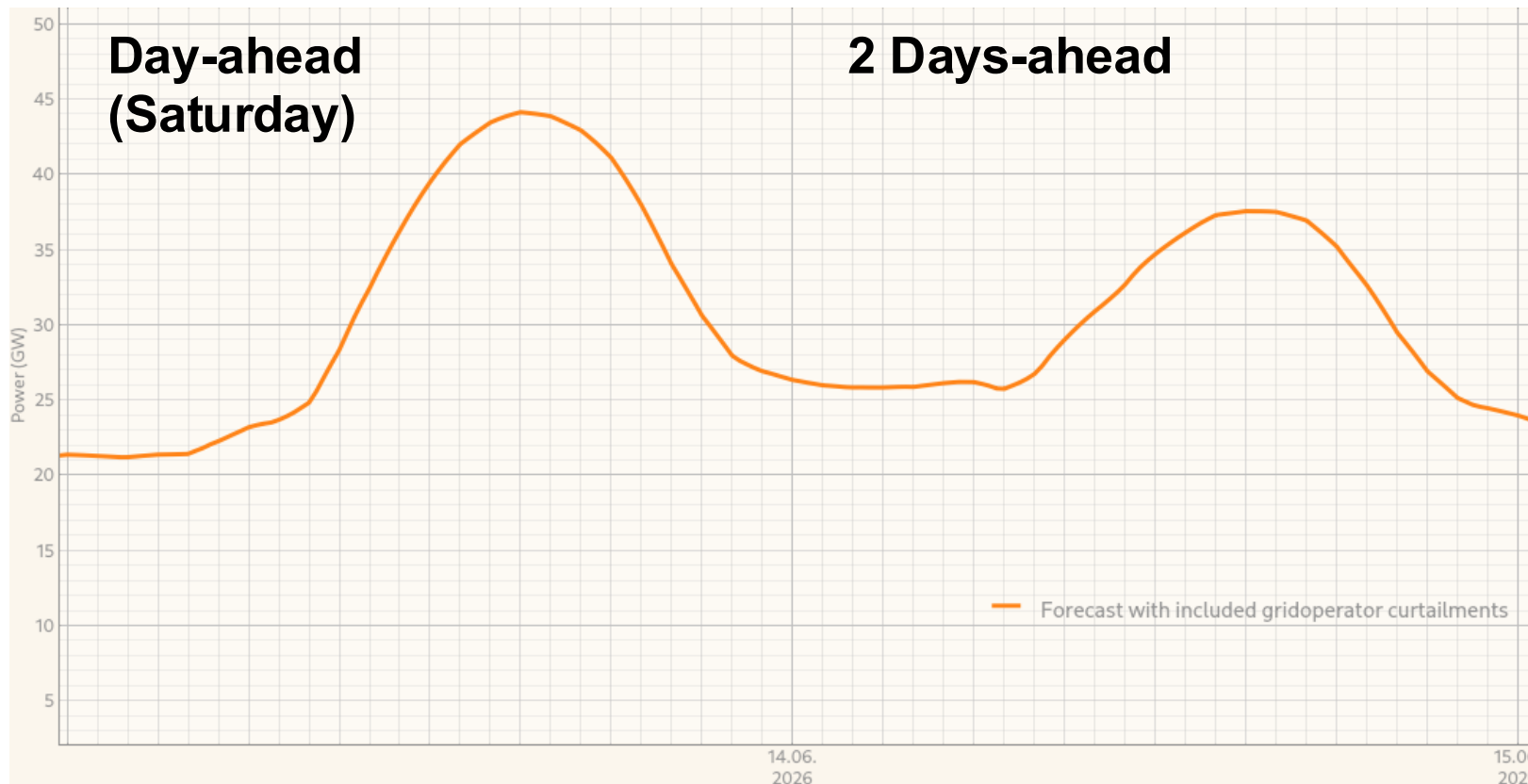


Forecasting and Measuring Wind Power Generation in Spain

- Due to high solar power generation, wind power generation is significantly curtailed on many days in Spain
- Traditional forecasting methods often produce low-quality results during curtailments
- Thanks to AI, many additional relevant parameters can be incorporated into the emsys forecast
- Significant curtailments are occurring in many EU countries

AI – Prediction of curtailments

It's Friday, June 12, 2:00 p.m. – predict the market-related curtailments!



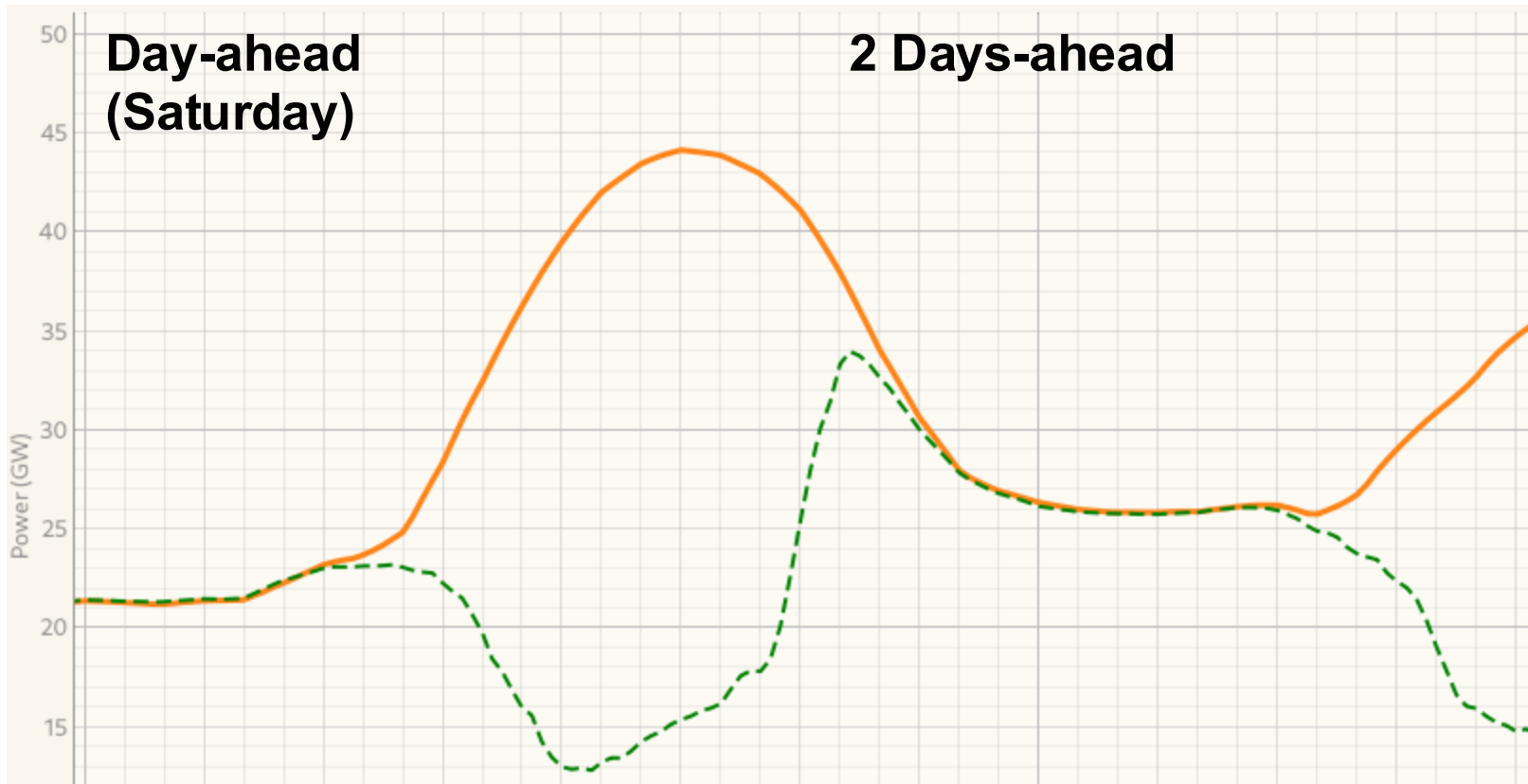
Hours	Price (€/MWh)
10-11	-4.92
11-12	-15.48
12-13	-27.42
13-14	-45.87
14-15	-44.99
15-16	-31.50
16-17	-12.67

DA Spot Market Prices for Saturday, June 13

Wind Forecast for Germany

AI – Prediction of curtailments

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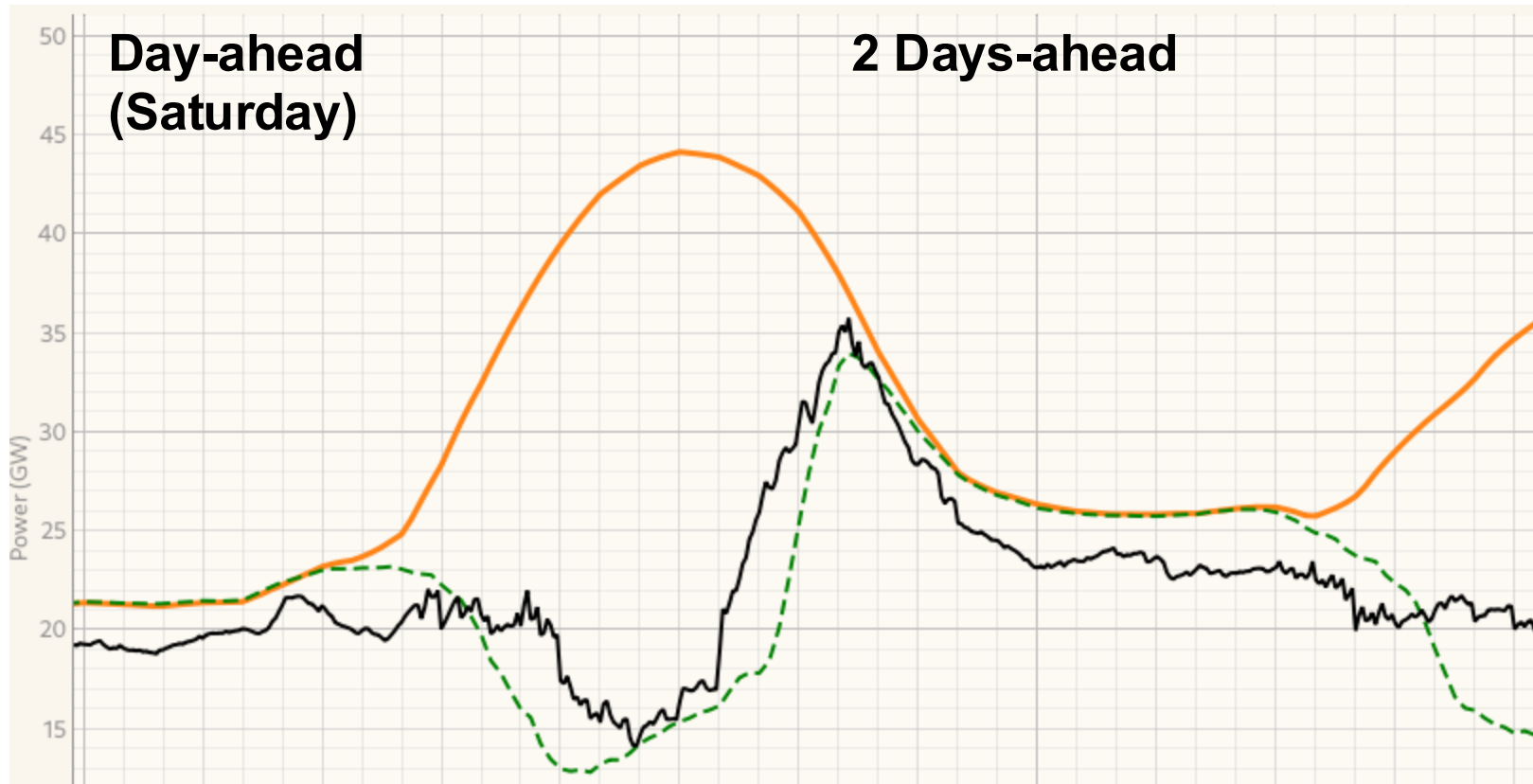
Wind Forecast for Germany

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DA Spot Market Prices for Saturday, June 13

AI – Prediction of curtailments

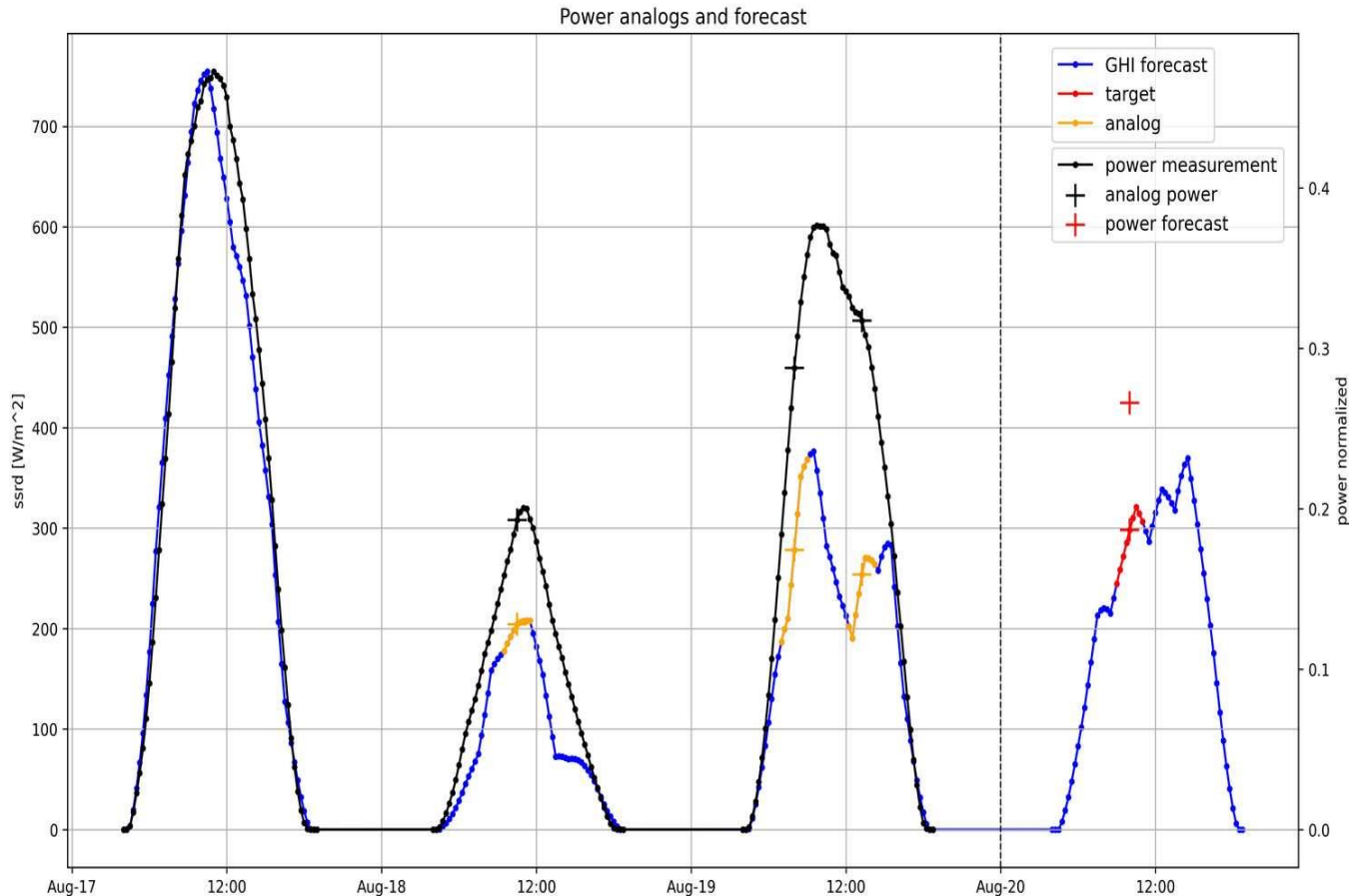
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Wind Forecast and Measurement for Germany

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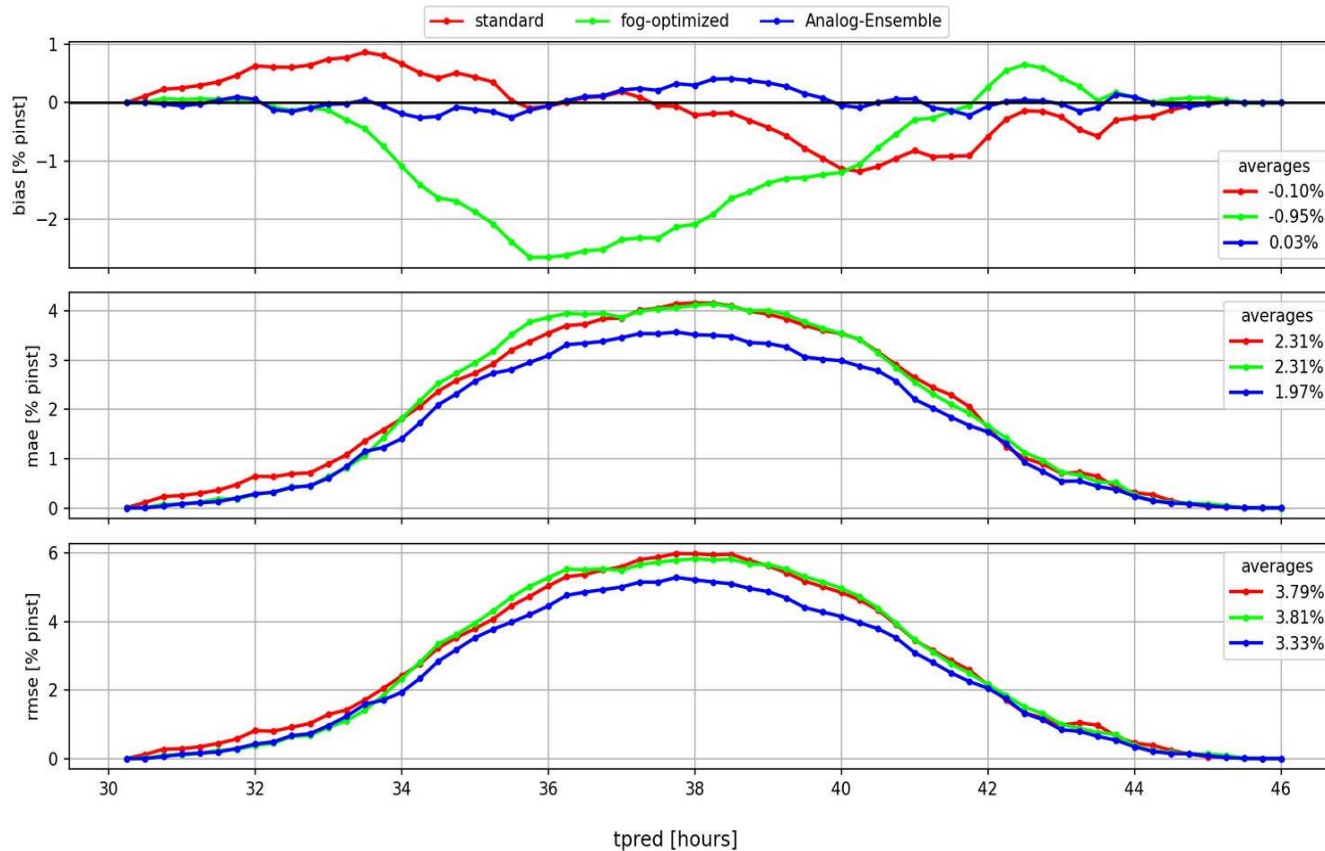
DA Spot Market Prices for Saturday, June 13



Overview of Forecast Generation

- Basis: Forecasts from NWP models
- Comparable days in the past are searched
- Deviations from the forecast are analyzed
- Adjusted forecast based on historical informations
- The method is still very computationally intensive - improvements are needed

AI – Smart Forecasts



Evaluation for February 2025 through February 2026
PV in central California

- Excellent results from the AI forecast for parts of California
- The bias in the morning is very balanced
- The AI forecast is based on only a few forecast points
- emsys prefers explainable AI and does not want a black box

Thank you for your attention!

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