

Anonymous Solar Forecasting Trial Outcomes

Lessons Learned and Trial Recommendations

Eamonn Lannoye
EPRI International

Aidan Tuohy
EPRI

William B. Hobbs
Southern Company Services Inc.

Justin Sharp
Sharply Focused LLC



Trial Description – Key Facts

6 Months
Trial Duration

4 Sites
Across the USA



**Advanced
Forecast
Benchmark**

10+



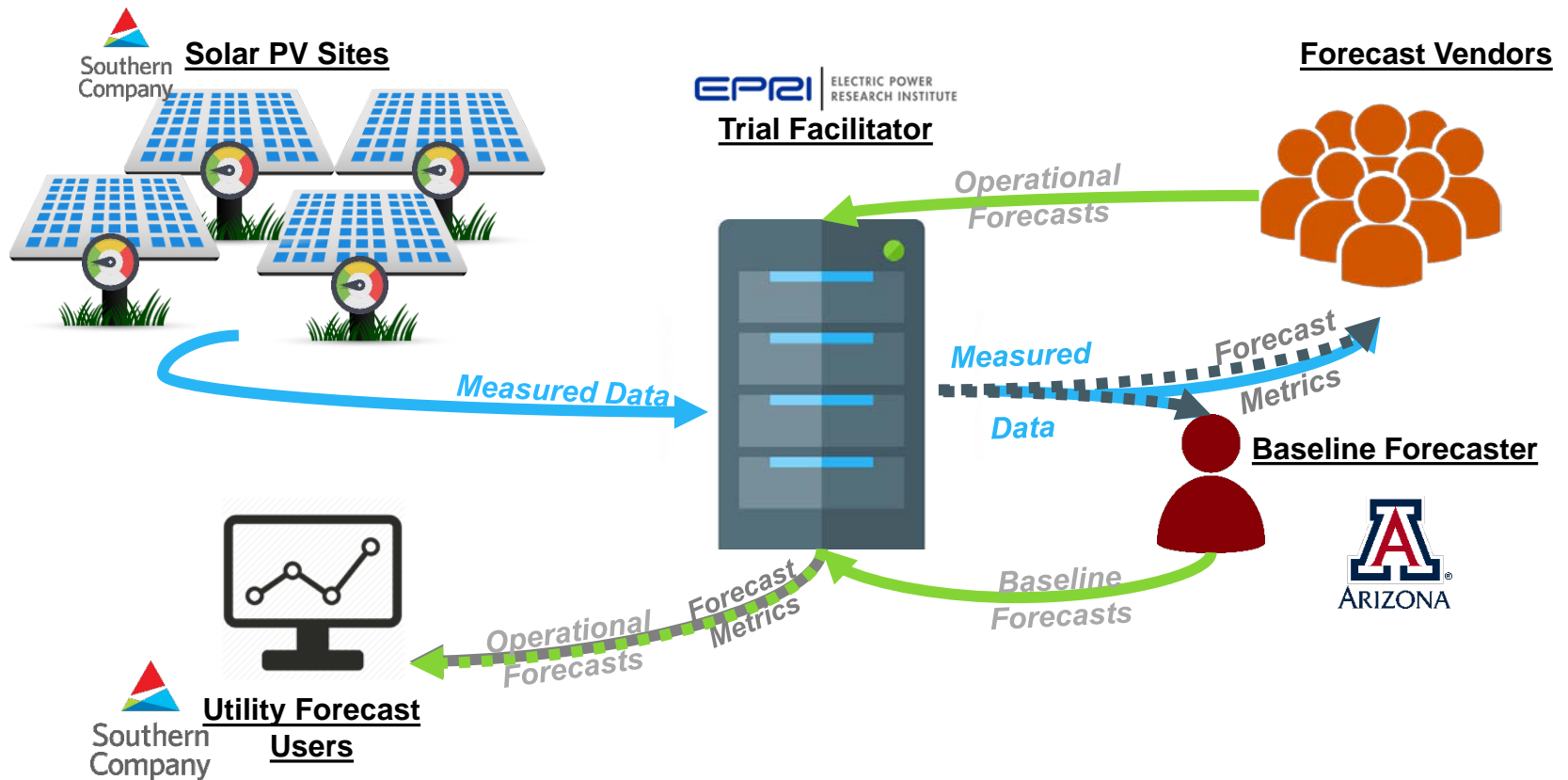
Forecast Vendors

Horizon: Now - D+10
Resolution: 1 Hour
Updated: Hourly

ANONYMOUS
Forecast Upload & Evaluation

Anonymous Forecast Trial

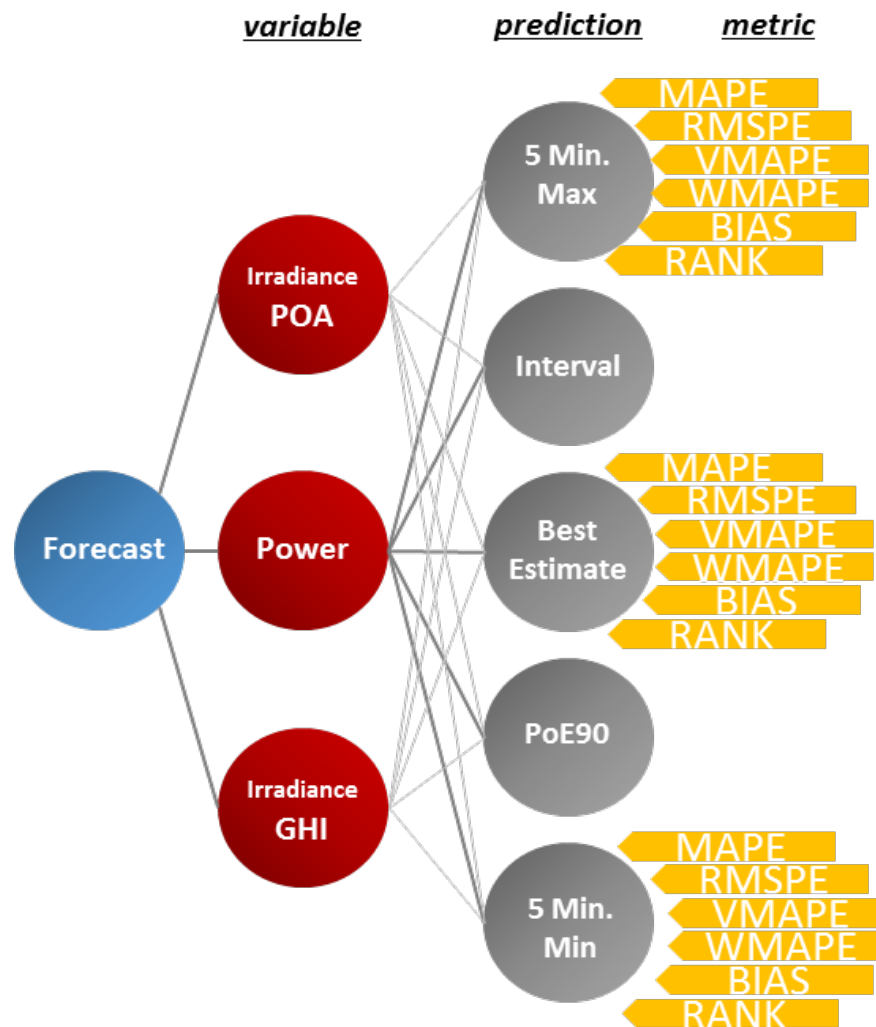
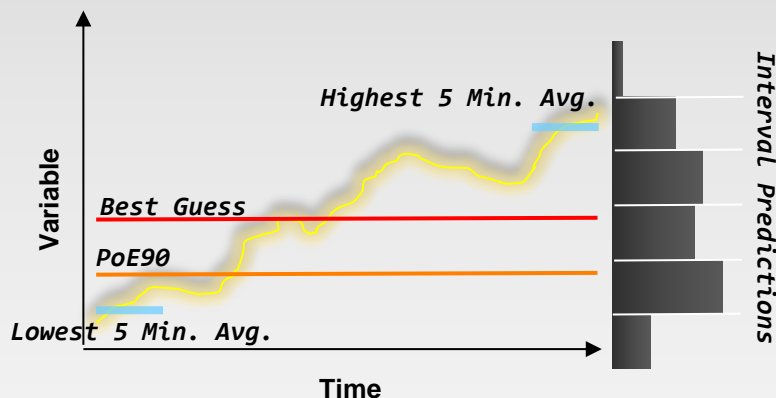
PROJECT GOAL UNDERSTAND STATE OF THE ART FOR COMMERCIAL SOLAR FORECASTING



Standard Forecast Format & Metrics

- Standard XML based forecast format used by all vendors
- Multiple variables
- Multiple Predictions
- Multiple Metrics

NOT JUST BEST GUESS...

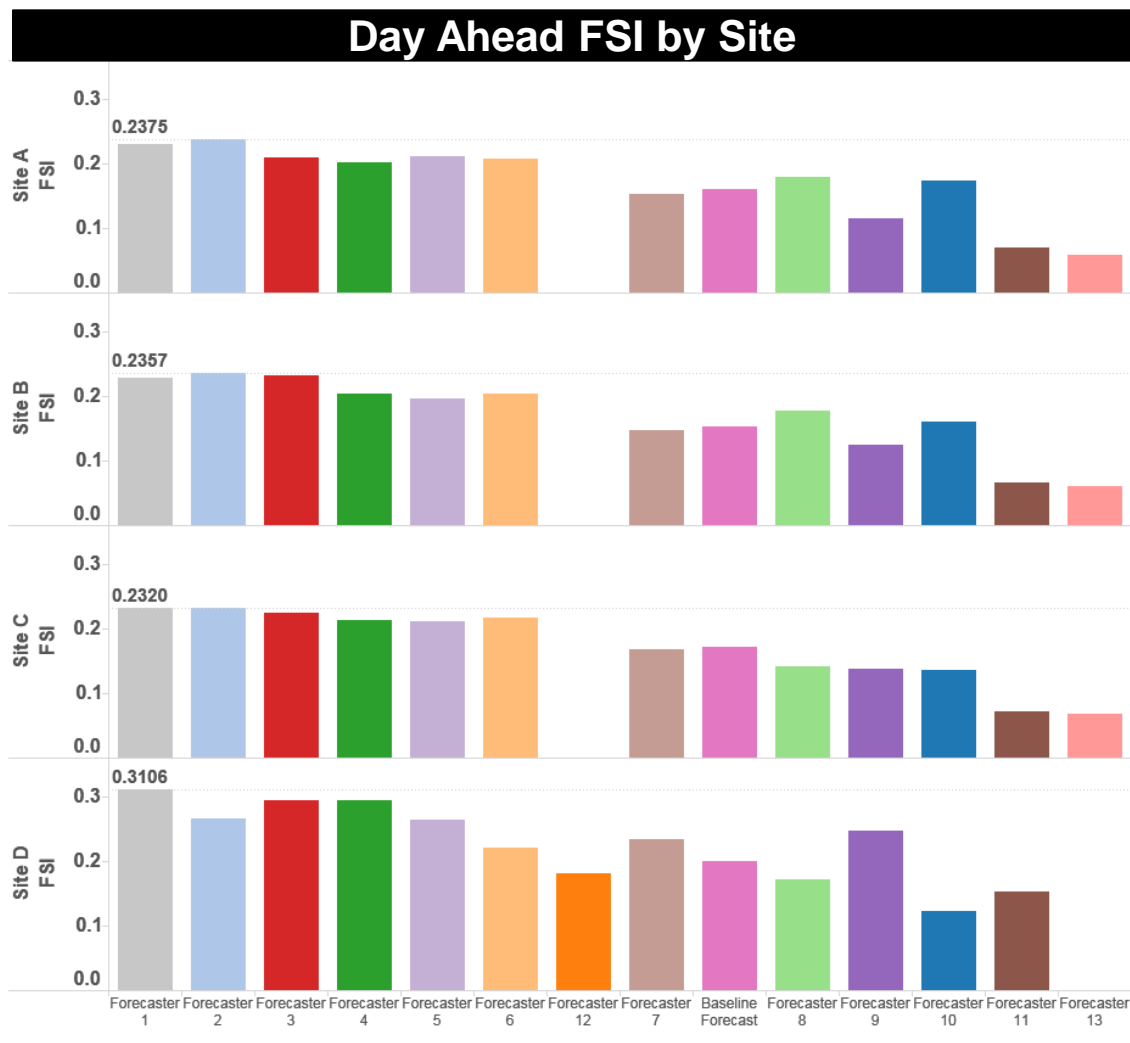


Forecast Skill Index - FSI

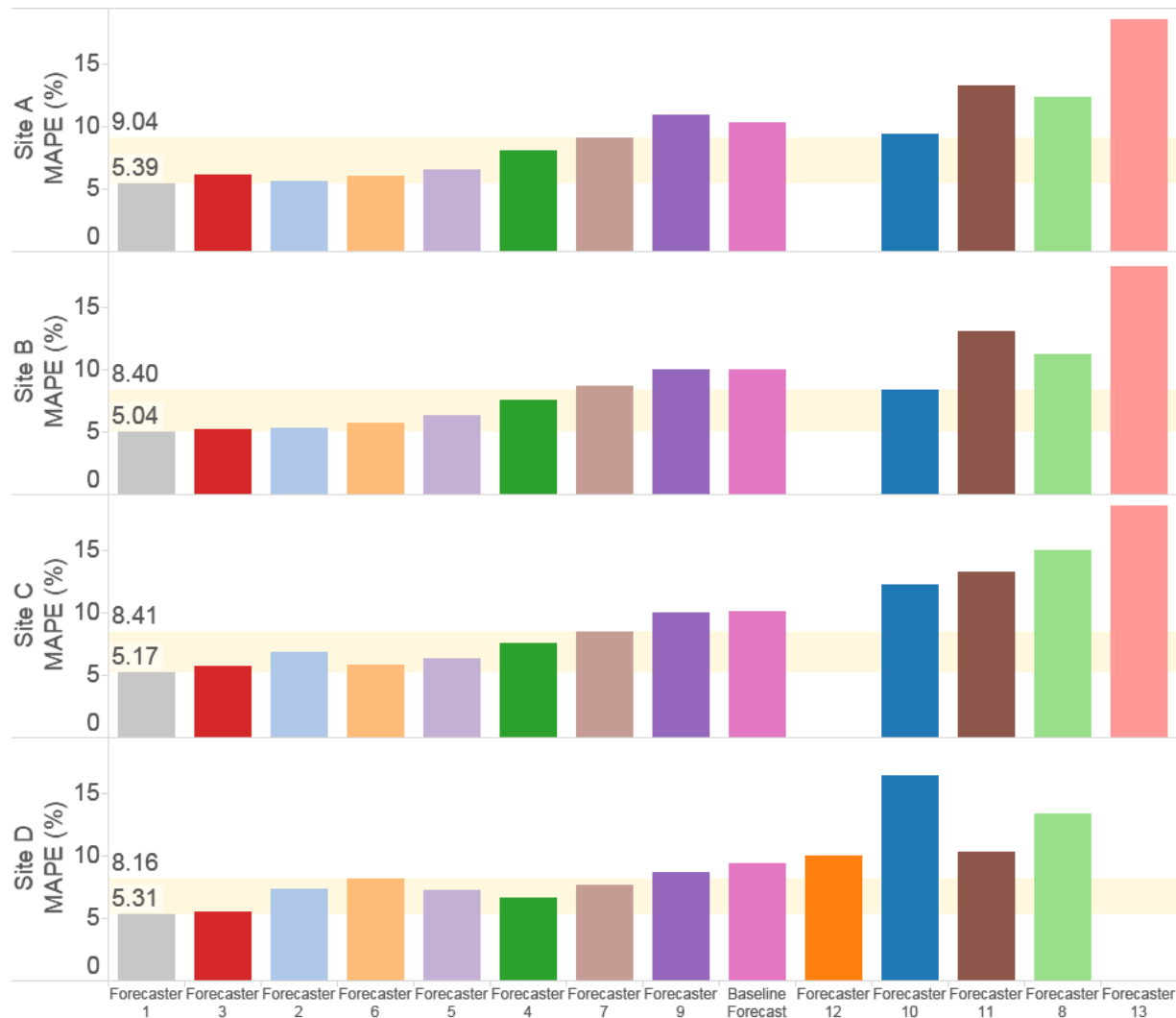
Used in previous trial to combine multiple accuracy assessments.

FSI includes:

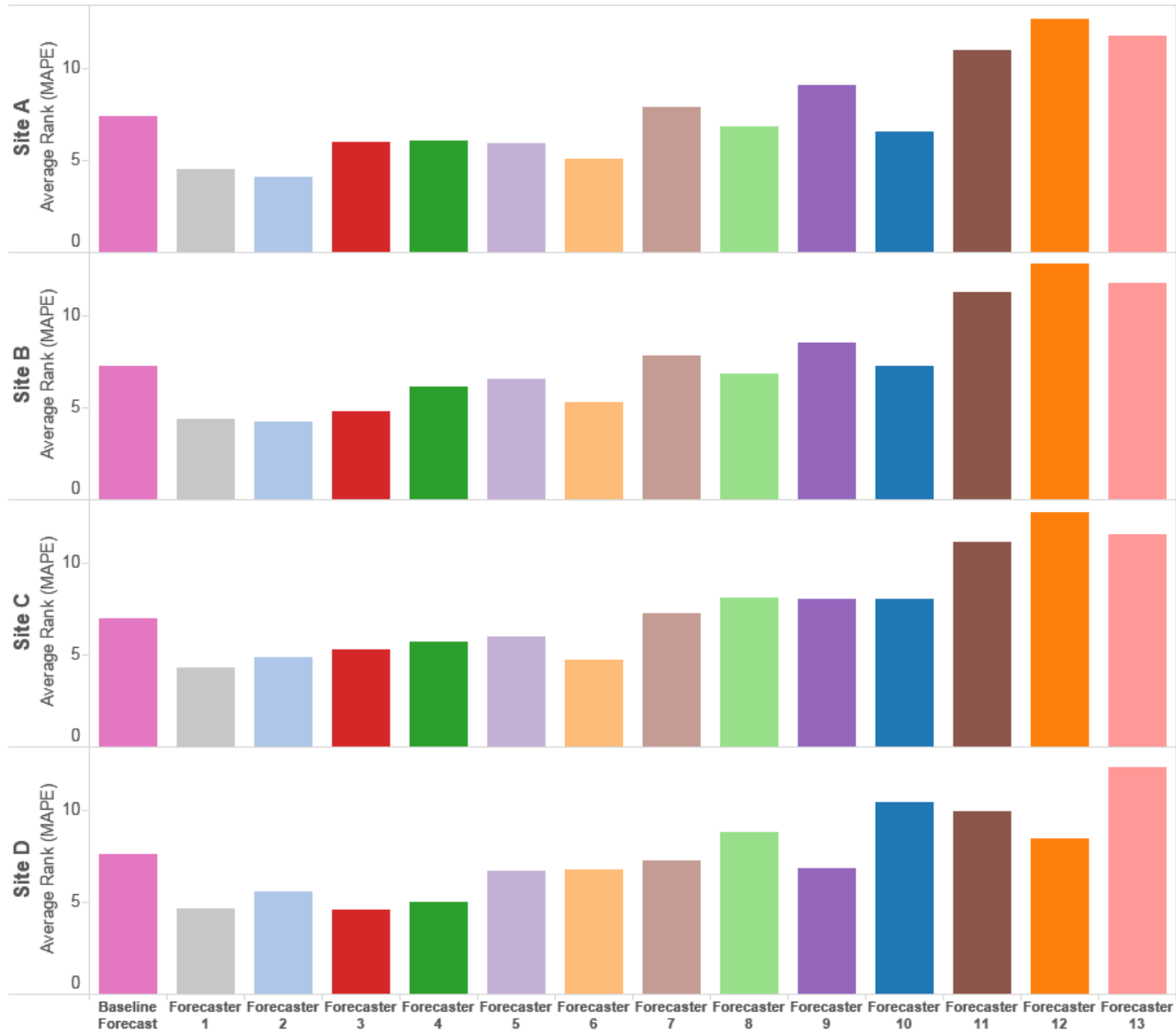
- MAPE (value, rank)
- RMSPE
- MAPE during variable periods
- MAPE weighted by time of day



MAPE – Best Forecaster ~5%, Median ~8.5%

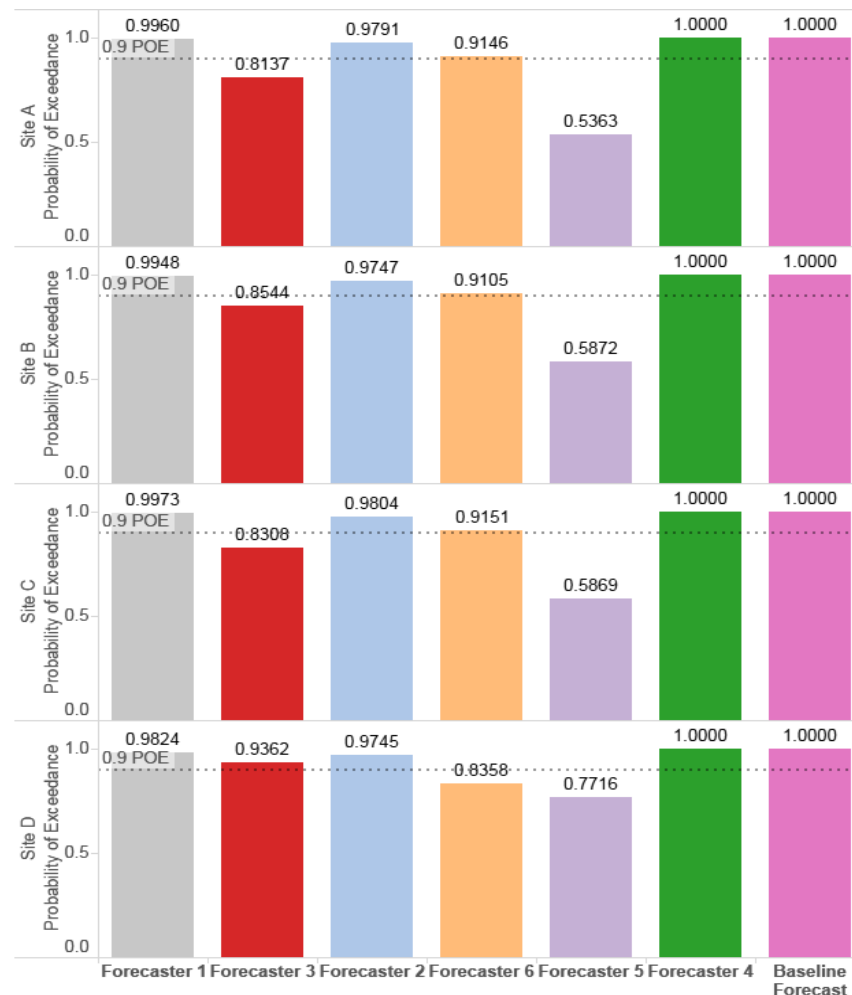


Forecaster Rank

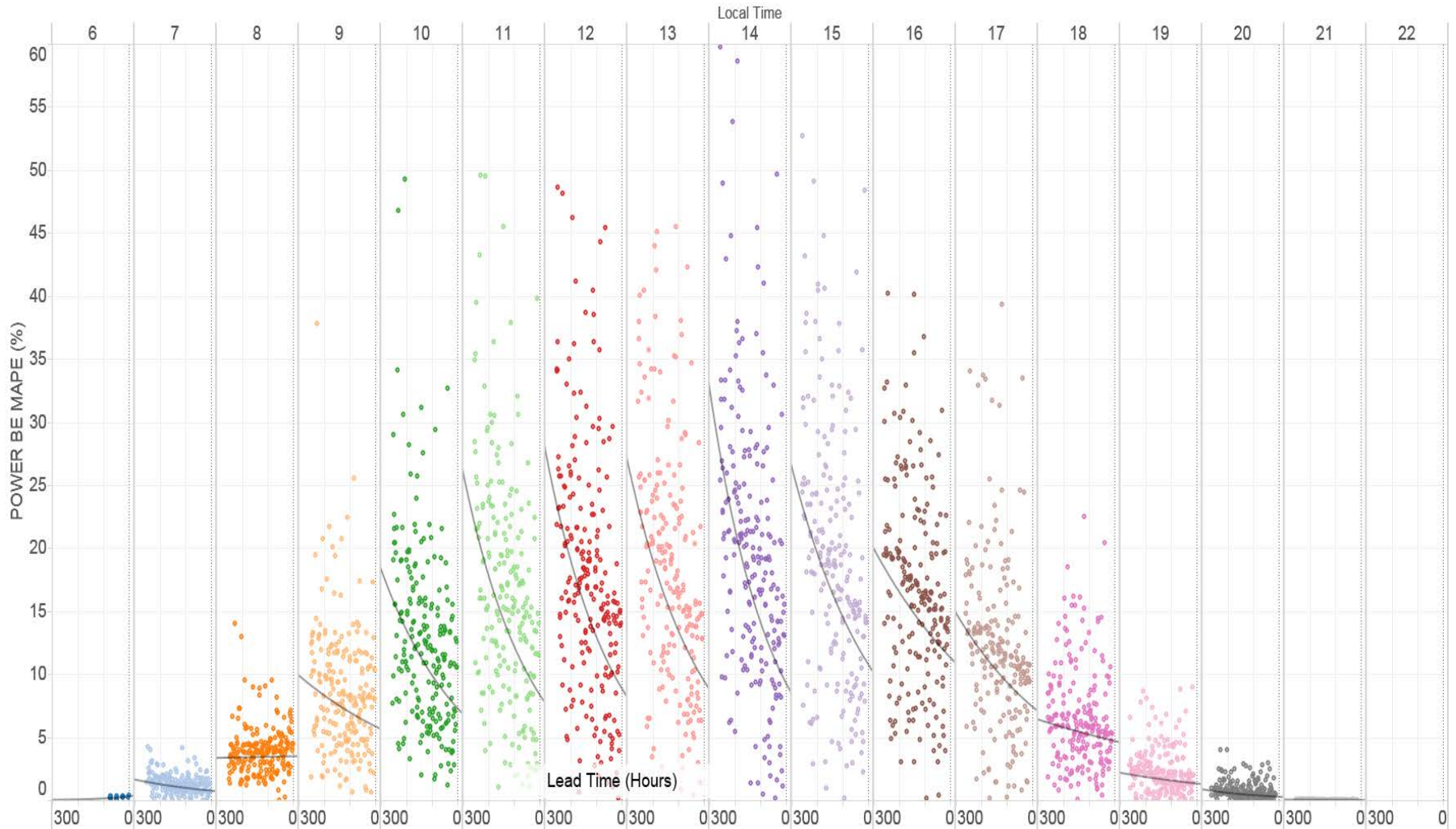


Probability of Exceedance Forecasts

- Validating 90% probability of exceedance forecasts
- 7-9% deviation from target not unusual
- Not all forecasters provided values



Lead Time and Time of Day – Single Site Example



Trial Design Recommendations (Updated)

Goal

Principle

Understand solar forecast **performance** for current sites to inform future performance.

Plant level forecasts for variety of

- Lead times
- Horizons
- solar plant sizes
- types

Understand solar forecast **performance** for current sites to inform future sites

Assess performance according to **multiple predictors** and metrics

Equitable treatment for forecast vendors

Anonymous participation of forecast vendors

Equitable treatment for forecast vendors

Performance evaluation by 3rd party

Equitable treatment for forecast vendors

Simplified requirements specification and transparent evaluation of forecaster performance

Understand potential **value** of solar forecasts

Assess consequence of solar forecast error and value brought by forecasting skill



Together...Shaping the Future of Electricity