

# Fast and Robust Probabilistic Net-Load Forecasting

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**Objective:** Day-ahead probabilistic forecasting of hourly net load at diversified sites

**Challenges:** High penetration of behind-the-meter solar generation; trade-off between accuracy, computational efficiency, and generalizability

## Approach:

(Step 1)

Decoupling between solar irradiance forecasting and net-load forecasting: We first forecast solar irradiance (using a hybrid model based on both physics and statistics), the results of which will be used for net-load forecasting

(Step 2)

Decoupling between point forecasting and probabilistic forecasting: We first generate point forecasts of net load, and then model the probability distributions of the forecast errors, the results of which will be used to generate probabilistic forecasts of net load

(Step 3)

Developing the underlying machine learning algorithms for the decoupled tasks: We will use a stacking model which consists of heterogeneous weak learners; those weak learners can be simple and fast algorithms, while the aggregate of them can still achieve satisfactory performance