Nimbus AI

Honolulu, HI

Problem

Intermittent solar generation limits adoption; forecasting solar production is necessary in the transition to a renewable and energy-independent future.

As behind-the-meter solar PV penetration increases, net load—the load at a substation net of renewable generation—becomes more volatile but also increasingly difficult to estimate.

Day-ahead net load forecasting is particularly important for power systems planning and market-based solutions to avoid price volatility.

Solution & Approach

We combine satellite-based instrument data with physics-based models and historical data series to produce probabilistic net load forecasts.

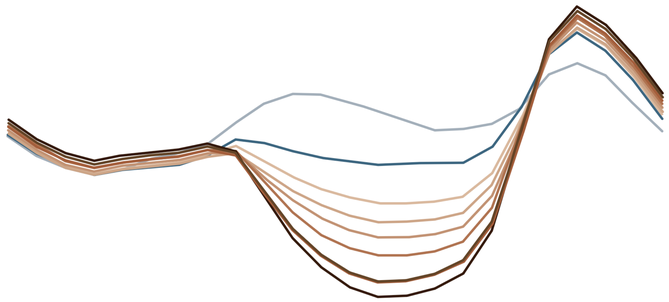
Target Customers

1. Utilities, power producers, and systems planners.
2. Other electricity market participants such as virtual bidders and financial entities.

Day-ahead **probabilistic net load forecasting** with machine learning:

- Utilities, power producers, and all electricity market participants
- Geographically flexible
- API-based queries
- Fast & Inexpensive

Net Load Curves

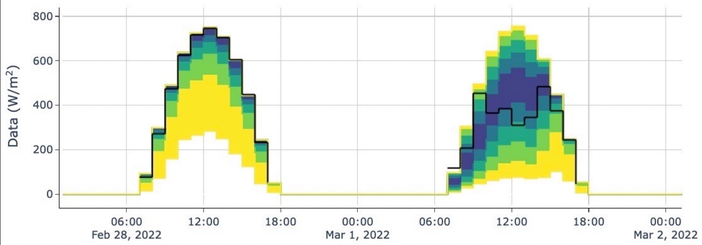


Net load; increasing levels of solar PV penetration lead to reduced net load in periods of high irradiance

Solar Forecast Performance

A winner of the American-Made Solar Forecasting Prize 2022

The **only competitor** to beat baseline at all 10 climate-diverse test sites in the US evaluated during the competition.



Sterling, VA day-ahead clear sky and partly cloudy forecasts with realized irradiance