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.

Day-ahead 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 to produce probabilistic forecasts.

We use deep neural networks to generate hour-by-hour probability distributions for solar irradiance over the next 48 hours.

Forecasts are quickly and inexpensively produced every 6 hours and can be requested from our system via API for **any location** in the US & Pacific.

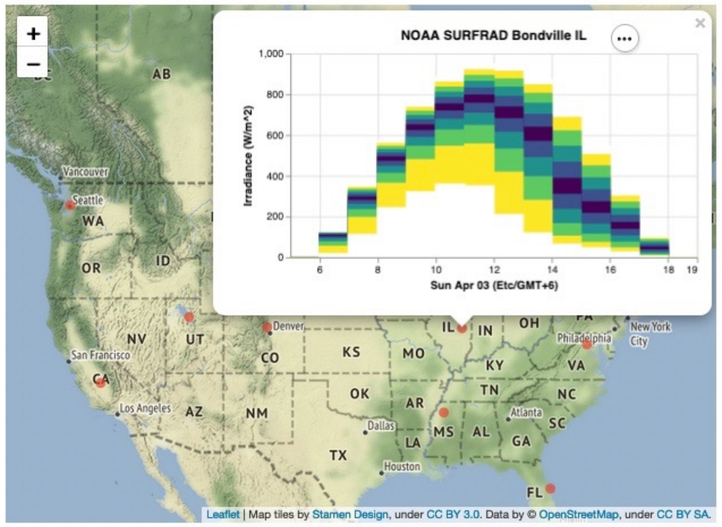
Target Customers

1. Electricity market participants: utilities, power producers, virtual bidders and financial entities, etc.
2. Energy Management System (EMS) & Distributed Energy Resource (DER) companies.

Day-ahead **probabilistic solar forecasting** with machine learning:

- Day-ahead power markets and EMS systems
- Geographically flexible
- API-based queries
- Fast & Inexpensive

MVP Dashboard

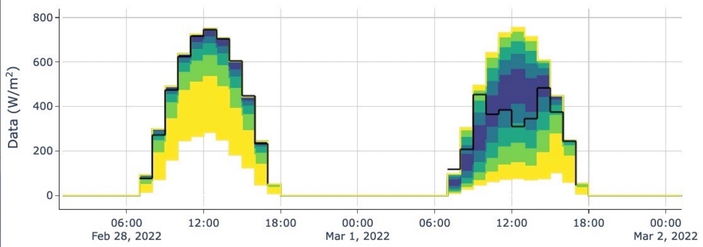


MVP dashboard; Bondville IL site

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