AI-Powered Energy Analytics

The electrification of transportation, the decentralization of energy resources, and the deregulation of energy markets, all coinciding with exponential increases in data available from energy users globally, have created a pressing need for AI and Machine Learning software to understand energy consumers and manage and optimize these decentralized energy resources.

Grid4C develops AI and Machine Learning solutions to extract maximum value out of smart meters and IoT data, embedding AI algorithms at the grid edge, while delivering predictive insights for energy providers, their customers, and the grid.

Grid4C is delivering AI-powered energy analytics to solve the most advanced use cases for energy providers globally, including:

- **Non-Intrusive Load Disaggregation** Identify home appliance loads within the premise and predict usage for each appliance every hour for the next 7 days.
- Predict, Detect, and Diagnose Faults for Home Appliances Deliver value to customers by alerting them before their appliances break or become highly inefficient. Monetize these insights by offering complimentary products and services, like home warranty offers or repair services.
- Identify Inefficient Home Appliances Notify customers when they have inefficient home appliances and what inefficient appliances cost them.
- **Detect Behavioral Anomalies** Alert customers for behavioral anomalies based on comparing their granular usage forecast to their actual usage. Notify how much these behavioral anomalies cost them.
- Identify and Forecast EV and Solar Customers Target custom demand side management or marketing offerings for customers with electric vehicles or solar, and forecast EV charging and solar generation.
- **Customer Segmentation and Targeting** Recommend personalized marketing or DSM offers based on bottom-up clusters of load profiles, appliance ownership, and other customer parameters.
- **Predictive Load Optimization through TOU Rate Insights** Identify and predict appliance usage and notify customers to shift individual loads to off peak times days in advance, in order to save energy or reduce their energy bills.
- **Optimize EV Charging** Optimize charging of electric vehicles based on customer usage patterns, rates, and demand on the local electric grid.
- Bottoms Up Load Forecasting Bottoms up predictive load forecasting at the meter level for every premise aggregated up to each asset on the grid, plus top down disaggregation enables the forecast and predictions at any level of granularity.
- **Propensity models** Predict customers who are most likely to accept EE and marketing offerings, to migrate to solar or churn in deregulated markets, and understand root cause.
- Simulate and Optimize Demand Response Identify curtailable load for each premise and enable the creation of control groups to simulate the effects of DR events.
- **Optimize DERs** Based on days / weeks / months ahead sub-hourly solar and consumption forecasts at the meter and sub-meter levels
- Grid assets faults prediction Based on meter level forecasting and mapping smart meters to grid assets
- Smart thermostat optimization Simulate ad forecast bill savings based on changes in thermostat settings and optimize settings when smart thermostat data is provided



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