User Energy Insight Feature Document

This document outlines actionable and engaging energy insights for household users based on their electricity consumption data. The goal is to provide meaningful, understandable, and interactive features that improve user experience and awareness.

Insight Feature Table

Feature Idea	Description	Value to User	Technical Notes
Daily Usage Summary	Shows total energy used each day.	Awareness of daily habits.	Aggregate data per day.
High Usage Hours	Visualize hours with highest consumption.	Pinpoint peak usage periods.	Group by hour and compute average.
Weekly Comparison	Compare this week's use to last week's.	Motivates behavioral change.	Requires week-based aggregation.
Weekday vs weekend			
Cost Estimator	Estimate cost based on local kWh prices.	Awareness of spending.	Multiply kWh by regional price rate.
Consumption Milestones	Track personal best low-consumption days.	Encourages energy-saving streaks.	Store daily min/max values.
Carbon Footprint Estimation	Convert kWh usage to CO_2 emissions using local grid factors.	Understand environmental impact.	Use standard carbon conversion rates per country.
Energy Budget Planner	Suggest a monthly budget based on past consumption trends.	Encourages planning and saving.	Learn from past 1–3 months to forecast. ###Makes more sense with the tarif and saving money related goals
Seasonal Consumption Tracker	Compare energy use across seasons.	Helps users prepare for winter/summer spikes.	Needs a few months of data to compare.
Hourly Cost Tracker	Show energy cost by time of day if on TOU (Time-of-Use) tariff.	Encourages using appliances during cheaper hours.	Needs tariff data; highlight peak vs. off-peak.
Phantom Load Detector	Spot unusually high night-time or idle-hour usage.	Educates on turning off standby devices.	Analyze consumption from 1–5am.
Smart Alerts (Unusual Spike)	Alert users of sudden spikes beyond baseline.	Prevents bill shock, flags appliance issues.	Detect outlier kWh in a 24-hour rolling window.

Power Consumption Challenge	Gamify reduction in consumption vs. previous week.	Adds fun & motivation.	Weekly aggregation + visual progress.
"Did You Know?" Tips	Based on user patterns, offer relevant energy tips.	Personalized engagement.	E.g., 'You use most power 8–9pm – try delay start for washing.'
Virtual Energy Coach	Narrate weekly reports like a mini coach.	Personal, friendly.	Simple rules engine + text templates.
Battery Storage Suggestion	Recommend solar + battery if night use is high.	Informs potential investment.	Tag high evening usage trends.
Weather–Energy Overlay	Compare energy spikes with weather data.	Helps relate usage to outside factors.	Requires weather API (by region).
Long-Term Energy Footprint	Show lifetime kWh & CO_2 equivalent.	Builds awareness.	Aggregate all data since signup.

https://www.fusioncharts.com/dashboards/smart-energy-monitoring-dashboard