JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

AI Building Energy Forecasting and Savings Verification Training Course

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

AI Building Energy Forecasting and Savings Verification Training Course

AI Building Energy Forecasting and Savings Verification is a 1-week training course for energy managers, facilities engineers and sustainability engineers, built around a savings verification dossier for one building portfolio. Rising energy costs, emissions disclosure and tighter capital budgets mean every efficiency measure must now prove its savings with defensible baselines. Jupiter Prime Training delivers this AI Building Energy Forecasting and Savings Verification course.

Why AI Building Energy Forecasting Matters Now

Three forces shape building energy work today: dense interval metering from smart meters and building management systems, investor and tenant pressure for credible emissions figures, and finance teams that release funding only for savings they can audit. An organisation that forecasts load well schedules chillers and boilers to demand, spots waste within days and defends its savings claims; one that forecasts poorly overpays for peaks and reports numbers nobody trusts. The course rests on ISO/IEC 42001, the international standard for AI management systems, and the NIST AI Risk Management Framework NIST AI RMF, alongside general savings verification protocols.

Who Gains Most from AI Building Energy Forecasting

- Those responsible for site energy budgets, tariffs and peak demand charges
- Those who run chillers, air handlers and building management system schedules
- Those who compile scope 1 and scope 2 emissions figures for disclosure
- Those who scope, fund and track energy conservation measures
- Those who maintain metering, submetering and sensor data pipelines

Estates and facilities groups gain most when an energy manager, a plant engineer and a sustainability analyst attend together and agree one baseline method.

AI Building Energy Forecasting Capabilities

Participants move from raw interval readings to forecasts, control setpoints and verified savings that finance and auditors accept.

- Build a weather-normalised load forecast from interval meter readings — chiller staging and peak avoidance
- Design an HVAC setpoint optimisation trial with comfort limits — plant engineers and occupants
- Apply anomaly detection to submeter streams — maintenance dispatch priorities
- Calculate avoided energy against an adjusted baseline — finance approval of retrofit funding
- Specify a digital twin scope for one plant room — capital planning decisions
-

Communicate verified savings and emissions effects — sustainability reporting and leadership

Key AI Building Energy Forecasting Terms

- Load forecast — a prediction of electricity or thermal demand for each interval ahead, driven by weather, occupancy and calendar inputs.
- Adjusted baseline — the modelled consumption a building would have used without a measure, corrected for weather and occupancy changes.
- Avoided energy — the difference between the adjusted baseline and metered consumption after an efficiency measure is installed.
- Meter anomaly — an interval reading or pattern that departs from expected behaviour, signalling faults, waste or data errors.
- Digital twin — a live model of a plant or building fed by sensor data, used to test control changes before applying them.
- Emissions factor — a coefficient converting a quantity of energy consumed into an estimate of greenhouse gas emitted.

AI Building Energy Forecasting Day by Day

Day 1: Energy Context and Meter Data Foundations

- Interval Meter and BMS Data Audit — Readiness for Forecasting Work
- Tariff Structures and Peak Demand Charges — Where Forecasts Pay Back
- Emissions Disclosure Pressures — Which Figures Need Verified Evidence
- Weather and Occupancy Feature Sources — Inputs Worth Collecting
- ISO/IEC 42001 and NIST AI RMF — Controls for Energy Models

Day 2: Load Forecasting Methods

- Degree-Day Regression Models — Simple Baselines Finance Teams Accept
- Gradient Boosting Load Forecasts — Hourly Demand for Chiller Staging
- Forecast Error Metrics and Backtesting — Choosing Models for Operations
- Thermal Storage and Pre-Cooling Schedules — Shifting Load Away from Peaks
- Forecast Drift Monitoring — When to Retrain Building Models

Day 3: HVAC Optimisation and Anomaly Detection

- Setpoint and Schedule Optimisation Trials — Comfort Versus Consumption Trade-Offs
- Chiller Plant Sequencing Models — Efficiency at Part Load
- Submeter Anomaly Detection Rules — Faults Flagged for Maintenance Crews
- Fault Detection and Diagnostics Alerts — Triage Order for Technicians
- Digital Twin Scoping for Plant Rooms — Testing Changes Before Deployment

Day 4: Measurement, Verification and Emissions

- Measurement Boundary and Baseline Period Selection — Defensible Savings Claims
- Routine and Non-Routine Adjustments — Fair Comparison After Retrofits
- Savings Uncertainty Estimates — Confidence Levels for Funding Decisions
- Emissions Factor Application — Converting Avoided Energy for Disclosure
- Savings Reporting Packs — What Finance and Auditors Need

Day 5: Practising the Savings Verification Dossier

- Portfolio Load Forecast Rebuild — Applying Day Two Forecasting Methods
- HVAC Trial and Anomaly Review — Applying Day Three Findings
- Baseline and Adjustment Walkthrough — Applying Day Four Verification Steps
- Peer Challenge of Savings Claims — Testing Assumptions Before Sign-Off
- Savings Verification Dossier — Final Portfolio Evidence for Approval

Applying AI Building Energy Forecasting After the Course

- Lead a backtest of a weather-normalised load forecast on one site and agree its use for chiller staging.
- Run an adjusted-baseline savings calculation for one completed retrofit and present it to finance.

AI Building Energy Forecasting Questions FAQ

What is AI building energy forecasting and why does it matter now?

AI building energy forecasting predicts interval demand from meter, weather and occupancy data. It matters now because tariffs reward peak avoidance, emissions disclosure needs credible figures and funding depends on verified savings.

Which roles gain most from AI building energy forecasting and savings verification?

Energy managers, facilities engineers and sustainability engineers gain most. You gain from shared baselines when plant operators, budget holders and emissions reporters attend together and settle on one verification method.

How does AI building energy forecasting differ from a general sustainability reporting course?

It is quantitative and plant-focused. A sustainability reporting course covers disclosure frameworks and narratives, while this course builds load forecasts, HVAC trials, anomaly rules and adjusted baselines that produce the verified numbers those reports depend on.

What do you bring back from AI building energy forecasting and savings verification?

You bring back a portfolio evidence file. It holds a backtested load forecast, an HVAC trial design, anomaly rules for submeters and an adjusted-baseline savings calculation with uncertainty, ready for review.

AI Building Energy Forecasting: The Way Forward

The savings verification dossier gives the energy manager the evidence for the first decision, whether the next retrofit tranche is funded. Plant engineers use its forecasts for staging, and sustainability engineers use its avoided energy figures for disclosure. After its first use, revisit the baseline period and the uncertainty bands, as occupancy and tariffs shift.