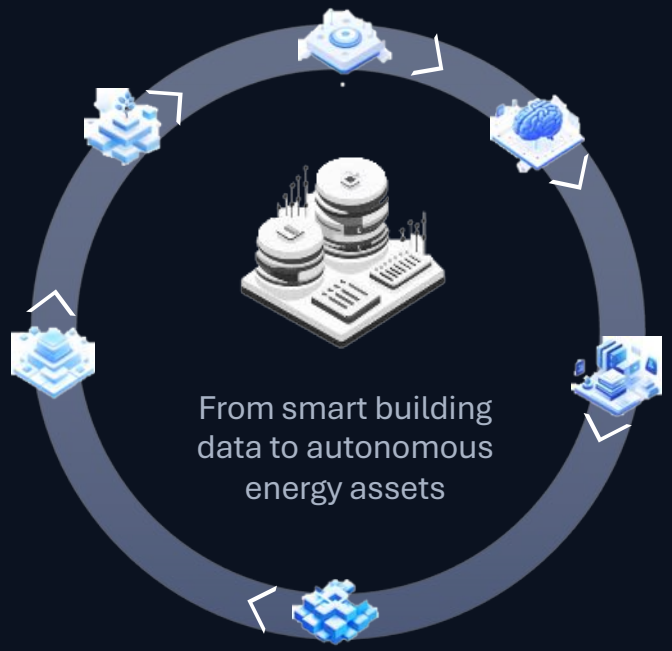
ENERGY-AS-A-SERVICE

Turning AI insights into verified savings

Transforming buildings from passive energy consumers into autonomous energy assets that continuously optimise cost, carbon, resilience and commercial value.

Liam Velani – Energy Client Partner, Infosys



THE PROBLEM

The smart building paradox

We have more data than ever. The harder problem is deciding what to do with it.

DATA

BMS, smart meters, weather, occupancy, tariffs, EVs, solar, storage, asset telemetry.

The building can see almost everything.

HUMAN DECISION

Someone still must decide which opportunity matters most, what to change, when to act, and what the trade-off is.

VALUE

The prize is not another dashboard.

It is a repeatable decision loop that turns information into measurable financial, energy and carbon outcomes.

“Which action creates the highest value tomorrow morning?”

THE SHIFT

Smart is not the destination

The operating model evolves from data collection to autonomous optimisation.



AI changes the last mile: it can connect insight to a recommended or bounded action — and then learn from the outcome.

THE PROPOSITION

The Autonomous Energy Enterprise

Buildings move from passive consumption to continuous, AI-led optimisation.



The strategic shift: from “What happened?” to “What should happen next?”

WHY AI

Not another dashboard — a decision engine

The value of AI is not finding one more anomaly. It is connecting cause, action, value and proof.

MODEL	DETECT	DIAGNOSE	ACT	VERIFY
TRADITIONAL	Alarm	Engineer investigates	Manual intervention	Maybe measured
AI-ENABLED	**Signal**	**Likely cause**	**Recommended action + expected value**	**Outcome verified**

AI should explain the likely cause, recommend an intervention, quantify the expected benefit and verify the result.

THE OPERATING REALITY

Optimising energy means managing competing objectives

The goal is not simply to minimise kWh. The system continuously balances value and constraints.

COST

Tariffs, demand charges, procurement

COMMERCIAL VALUE

Flexibility, export, asset utilisation

RESILIENCE

Reserve capacity and critical loads

AI ENERGY ORCHESTRATOR

CARBON

Carbon intensity and reporting

COMFORT

Occupancy and operating limits

ILLUSTRATIVE SCENARIO

One day in an autonomous energy estate

A practical example: AI continuously decides, acts within guardrails and proves the outcome.

06:00

PREDICT

Forecast demand, occupancy, weather, tariffs and solar.

07:30

DIAGNOSE

Detect unusual AHU performance and estimate impact.

12:00

OPTIMISE

Pre-condition, shift flexible loads, charge/discharge storage.

16:30

ORCHESTRATE

Balance grid signals, EV demand, resilience reserve and cost.

18:00

VERIFY

Normalise performance, quantify avoided cost and carbon, learn.

The differentiator is the closed loop: detect → decide → act → measure → learn.

THE BUSINESS CASE

Verified savings is where AI becomes commercially credible

Recommendations are interesting. Verified outcomes can support funding, governance and scale.

1 BASELINE

Establish expected performance under normal conditions.

2 INTERVENE

Execute a targeted change with defined guardrails.

3 NORMALISE

Account for weather, occupancy and operating context.

4 VERIFY

Measure attributable cost, energy and carbon impact.

5 LEARN

Feed the result back into the next decision.

Without verification, AI produces recommendations. With verification, AI produces a business case.

A NEW LENS

From energy efficiency to energy productivity

The question changes from “How much energy did we save?” to “How much value did we create from every kWh?”

EFFICIENCY	**Consume less**	Reduce waste
OPTIMISATION	**Consume intelligently**	Use energy at the right time
PRODUCTIVITY	**Create more value**	Maximise value per kWh
MONETISATION	**Capture market value**	Trade, store, export, flex

ENERGY PRODUCTIVITY INDEX

A portfolio lens to compare assets not only by how little they consume, but by the value they create from energy.

Think estate-wide: where should the next euro of energy or capital go?

PORTFOLIO INTELLIGENCE

From one building to the whole estate

AI becomes strategic when it can prioritise actions across buildings, assets and investment decisions.

BUILDING

Which load should change?

HVAC / lighting / controls

CAMPUS

Which asset should flex?

Storage / EVs / generation

ESTATE

Where is the next best action?

Prioritise across sites

CAPITAL

Where should we invest?

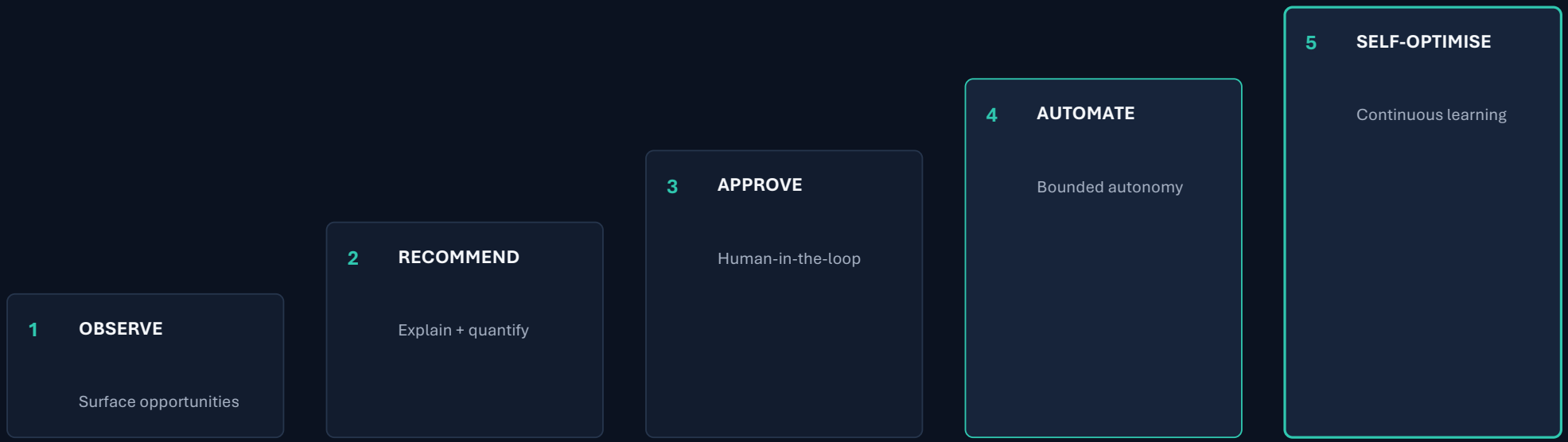
Highest-value interventions

The unit of optimisation expands equipment → building → campus → estate → energy portfolio.

TRUST & ADOPTION

Autonomy is a journey, not a switch

The practical path is to start with decision support and earn the right to automate.



Guardrails matter: comfort, safety, operational constraints, resilience and human oversight.

THE METAPHOR

Every building needs an AI Energy CFO

An always-on system that manages energy as a financial and operational asset.

- When should I consume?
- When should I store?
- When should I export?
- When should I buy?
- Which building should receive energy first?
- Which investment creates the highest return?

Not another dashboard. A continuous energy decision-maker.

THE COMMERCIAL MODEL

Why Energy-as-a-Service matters

The proposition becomes scalable when intelligence, action and verified outcomes are delivered as an operating service.

INTELLIGENCE

Monitor + predict + recommend
AI interprets the estate and prioritises action.

ORCHESTRATION

Automate within guardrails
AI coordinates HVAC, storage, EVs, renewables and loads.

VERIFICATION

Measure the outcome
Savings and carbon impacts are tracked against a baseline.

CONTINUOUS IMPROVEMENT

Learn + optimise
The service gets better as the building produces more evidence.

The promise: turn energy from an operating cost into a continuously managed value stream.

THE FUTURE OF THE SMART BUILDING

From passive energy consumer to autonomous energy asset.

COST | CARBON | RESILIENCE | COMMERCIAL VALUE

Predict. Decide. Act. Verify. Learn.

The building should not only report what happened yesterday.
It should decide what creates the greatest value tomorrow.