

Beyond the Key Card:

Rethinking Guest Room Energy Management

Why the industry's default approach to switching off empty rooms is reaching the end of its useful life — and what's replacing it.

For over two decades, the key-card-in-slot switch has been the default answer to guest room energy management. Walk into almost any mid-market hotel and you'll find the same setup: insert the room key into a wall-mounted slot, and the lights and power come on. Remove it, and everything shuts off.

It's simple, cheap, and was genuinely innovative when it was introduced. But it's also a technology built for a different era, and it's increasingly showing its age against modern occupancy-based systems like ALL|OFF.

The Core Problem: Presence Isn't Occupancy

Key-card switches don't actually know whether a guest is in the room. They only know whether a card is in the slot — and that distinction matters more than it sounds.

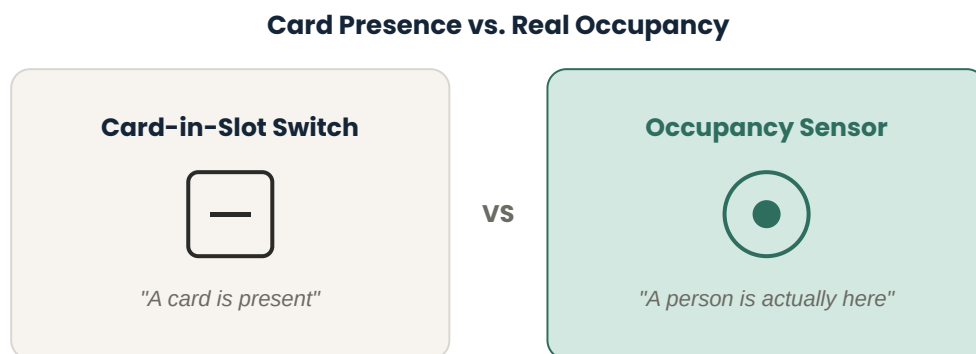


Figure 1 — Card presence vs. real occupancy: two different signals, often confused for the same thing.

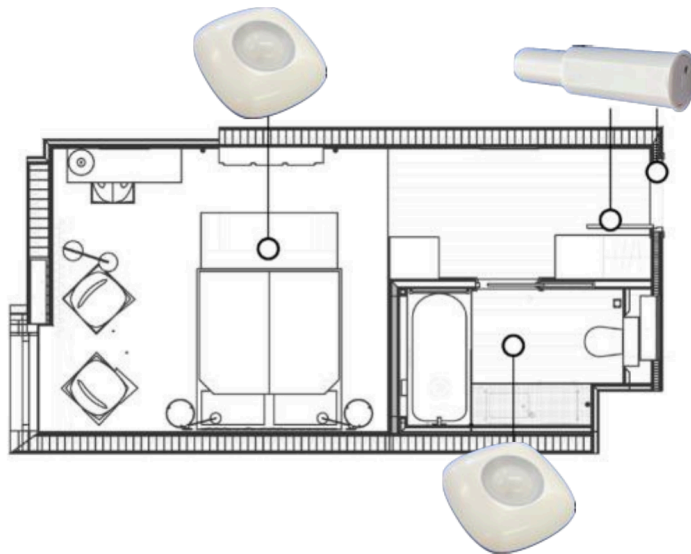
Guests quickly learn the workaround: leave a spare card, an old hotel key, or even a cut piece of plastic in the slot, and the power stays on all day whether anyone is there or not. According to the Architectural Association of America, traditional key-card switches are overridden by guests — usually with a spare card or business card — up to 65% of the time. Air conditioning keeps running, lights stay lit, and the entire premise of the system — save energy when the room is empty — quietly falls apart.

ALL|OFF closes that loophole by design. Rather than inferring behaviour from a piece of plastic, it uses a wireless door sensor plus PIR occupancy sensors to detect whether a room is genuinely empty and responds accordingly — and because it's impossible for a guest to override, the energy savings are assured.

"A card in a slot tells you almost nothing about whether anyone is actually in the room."

How ALL|OFF Works

Using motion sensors alone isn't a guest-friendly way to detect occupancy, since regular movement would be needed to keep the lights on — the effect often seen in public lavatories. ALL|OFF solves this with a door sensor: when the door opens, the lights switch on immediately, creating a pleasing welcome effect. Once motion is detected after the door closes, the room is 'latched' as occupied, so no further movement is required to keep the lights on.



Sensor placement within a typical guest room — door sensor, PIR motion sensors, and control unit.

When a guest leaves and the door closes, a short exit-delay timer starts (typically 5–10 minutes). If no further motion is detected, the room's lights and HVAC switch off and its status is set to unoccupied. Throughout, the sensors continue monitoring room temperature, re-enabling HVAC if it drifts outside comfortable limits — guest comfort is never compromised.

Guest Experience Takes a Hit With Key Cards

There's a second, less-discussed problem: what happens when a guest genuinely doesn't have a card in the slot. Step out without your key, or hand it to a partner, and the room goes fully dark — no power, no charging, nothing. It's a small but real friction point that shows up in guest complaints and online reviews with some regularity.

ALL|OFF avoids this altogether, since it works alongside standard light switches rather than overriding them — guests interact with the room exactly as they always have, while the system quietly manages energy use in the background.

All-or-Nothing vs. Granular Control

Key-card systems tend to be blunt instruments: one relay, one circuit, everything on or everything off together. There's rarely any ability to keep a fridge or minibar running while cutting lighting, or to manage HVAC and lighting on separate logic.

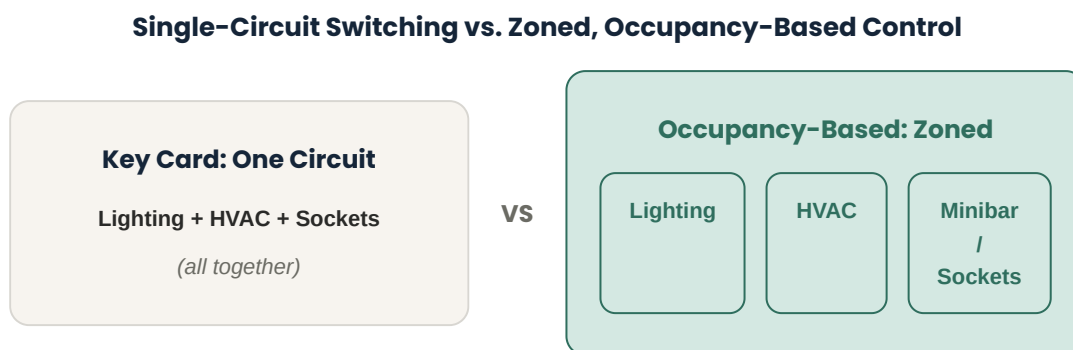


Figure 2 — Single-circuit switching vs. zoned, occupancy-based control.

Granular, zoned control matters increasingly as hotel groups look to hit specific ESG and net-zero targets, rather than simply listing vague "energy-saving technology" on a spec sheet.

No Data, No Reporting

Key-card switches are dumb hardware — they don't log anything, connect to anything, or report anything. If a sustainability director wants to know actual room-level energy performance across a portfolio, a key-card system simply can't tell them.

ALL|OFF is built for the opposite: energy and occupancy data that can feed into building and property management systems, giving operators real evidence for ESG disclosures rather than an assumption that the system is working.

Installation and Disruption

Legacy key-card switches are typically hardwired into the room, which means retrofitting an existing hotel — as opposed to fitting it during a new build — can be disruptive, slow, and often requires an electrician to rewire each room individually.

ALL|OFF is designed with retrofit in mind: fully wireless, installable in under 30 minutes per room, and fitted without taking rooms out of service or disrupting hotel operations. For a hotel group weighing whether to upgrade an existing estate, that difference in installation burden is often the deciding factor.

CASE STUDY

Whitbread Hub by Premier Inn, Soho



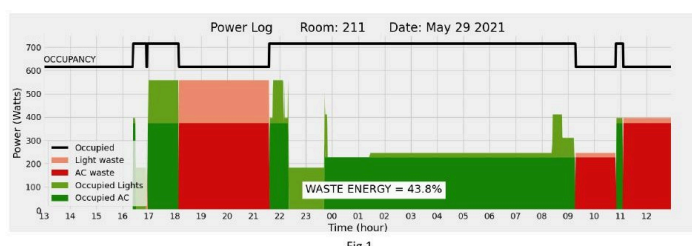
Hub by Premier Inn, Berwick Street, Soho, London — site of the 108-room ALL|OFF energy study.

Whitbread install occupancy sensing as standard across all Hub-branded hotels, and allowed a detailed independent study across their newly-opened 108-room hotel on Berwick Street, Soho. Every room's occupancy sensing system was connected to a central monitoring server, capturing guest behaviour and logging HVAC and lighting power consumption on a minute-by-minute basis.

The study ran over three months. To create a genuine comparison, occupancy sensing was deliberately disabled in 10% of rooms, so power usage could be measured across both occupied and unoccupied periods, in both modified and unmodified rooms. In total, data from over 1,500 guest-nights was collected.

40–45% average energy saving, verified across 108 rooms over 3 months

With typical savings in that range, ALL|OFF usually recovers its cost in under 9 months — making it one of the fastest-payback upgrades available for an existing hotel estate.



Real power-log data, Room 211 — 43.8% of total energy was used while the room stood empty.

This particular room illustrates a very typical pattern: the guest checks in at 4:30pm, leaves by 6pm without switching anything off, and doesn't return until 9:30pm — over three hours of wasted HVAC and lighting.

A similar gap opens up after checkout the next morning, with the room running fully powered until housekeeping arrives. Across the full study, this pattern of guests leaving rooms powered while away was the norm, not the exception: genuinely diligent guests who switched everything off themselves were observed only three times across the entire study.

Across a random 20-room sample analysed in the study's appendix, the average waste eliminated by ALL|OFF was 41.8% — closely matching the full-study result of 40–45%, and giving a reliable, repeatable figure hotel groups can plan around.

Illustrative comparison diagrams (Figures 1 & 2) are indicative of industry-typical patterns. Case study data and charts sourced from the Wireless ALL|OFF Energy Saving Study, Whitbread PLC / Hub by Premier Inn, Berwick Street, Soho (April–June 2021).