

A guest room at dusk. Every setpoint here is a rule about one of three room states.

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Card in the slot is not occupancy.

In 2022 ASHRAE stopped accepting a captive card holder as the way to meet the guest room lighting rule, and deleted the matching HVAC sentence. Key cards still open doors. What the code asks for now is evidence that someone is in the room.

THE ROOM, AS THE CONTROLS SEE IT

What the room can actually tell the controls



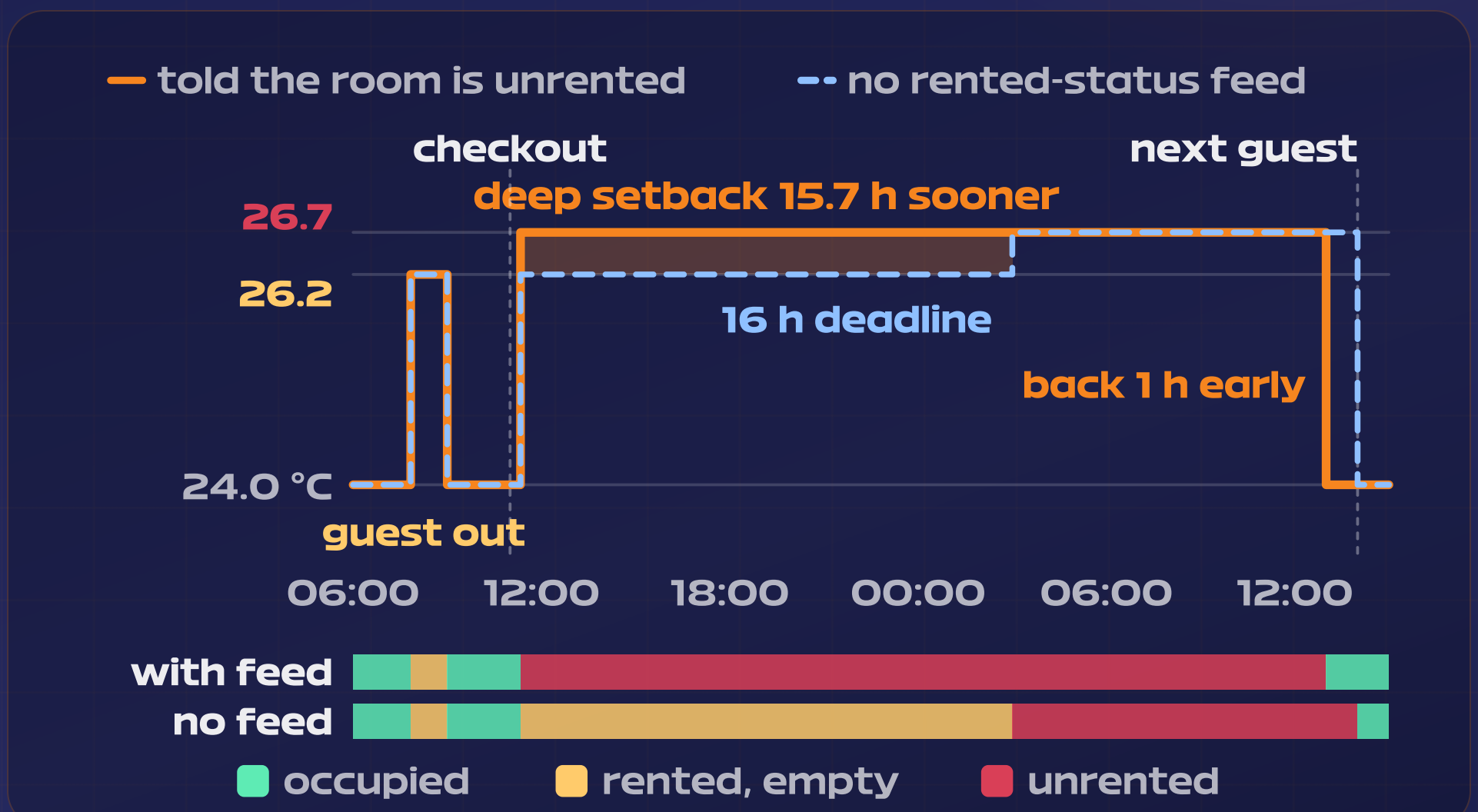
1. door lock event
2. door contact
3. presence sensor
4. card holder: input
5. room controller
6. fan coil unit
7. window contact
8. DND and MUR sign
9. room panel

occupancy is decided by 1, 2 and 3
the card holder is an input, not proof

A card in a holder proves one thing: a card is in a holder. What reads the room is the **door lock event, the door contact and presence detection**. Specify them in combination, with the timers in minutes. [4]

THREE STATES, ONE DAY

Shallow when the guest steps out, deep when the room is unrented



Setback means moving the setpoint while nobody is in the room. Guest steps out: within **20 minutes** the setpoint moves at least 4 °F (2.2 °C). Room unrented: **80 °F (26.7 °C)** cooling. Both numbers are deadlines in ASHRAE 90.1, not waiting times. [1]

A controller told the room is unrented must reach the deep setpoint within 20 minutes; one that cannot see rented status has up to 16 hours. Nothing stops it acting sooner.

WHAT CHANGED, AND WHAT DID NOT

"Card key controls shall not be used to comply"

2 keys issued → **1 stays** in the slot → **lights on** room empty

ASHRAE 90.1-2016
§ 6.4.3.3.5.3
HVAC
a compliance method

ASHRAE 90.1-2019
§ 9.4.1.3(b)
lighting
card-key rooms exempt

ASHRAE 90.1-2022
§ 9.4.1.3(b)(1)
lighting
not for compliance

ASHRAE 189.1
guest room clause
all four loads
not for compliance

a method, then an exemption, then neither

Addendum bp to 90.1-2019 put that sentence into **90.1-2022 §9.4.1.3(b)(1)**. It struck the exemption that let card-key rooms skip the rule, and deleted the HVAC sentence that let a card indicate occupancy. **Door access is untouched.** [1]

90.1-2025 keeps the sentence, cuts 20 minutes to 15 and renumbers it §9.4.1.4(b)(1). ASHRAE 189.1's guest room clause rejects captive keycards for lighting, switched outlets, televisions and HVAC together. [1][2]

WHERE THE REQUIREMENT ACTUALLY LIVES

No product standard, two code clauses

searched

~~ISO · IEC · EN~~

~~SASO · ASHRAE~~

no product standard found

→

ASHRAE 90.1-2022

§ 6.4.3.3.5
HVAC, above 50 rooms
§ 9.4.1.3(b)
lighting, every room

KNX, BACnet, DALI: communication only

two clauses, and two different scopes

Nothing we could find defines what a guest room system must do, and KNX, BACnet and DALI standardise communication, not room management. The duties sit in two clauses of ASHRAE 90.1: **§6.4.3.3.5** for HVAC above 50 guest rooms, and **§9.4.1.3(b)** for lighting and switched receptacles, with no room count at all. [1]

So the scope of works is whatever you write. Name the room states, the setpoints and the delays, or the contractor will.

REQUIRED AGAINST SOLD

Five loads are regulated. A room panel is not.

what codes regulate 5	what brochures sell 7
lighting	unified room panel
switched receptacles	scene presets
HVAC setpoint	do not disturb
ventilation	minibar sensing
televisions, 189.1 only	energy display
	motorised curtains
	voice control

credits reviewed:
90.1 and 189.1
LEED v5 EA, EQ
BREEAM Hea 01
Mostadam HC-01..16

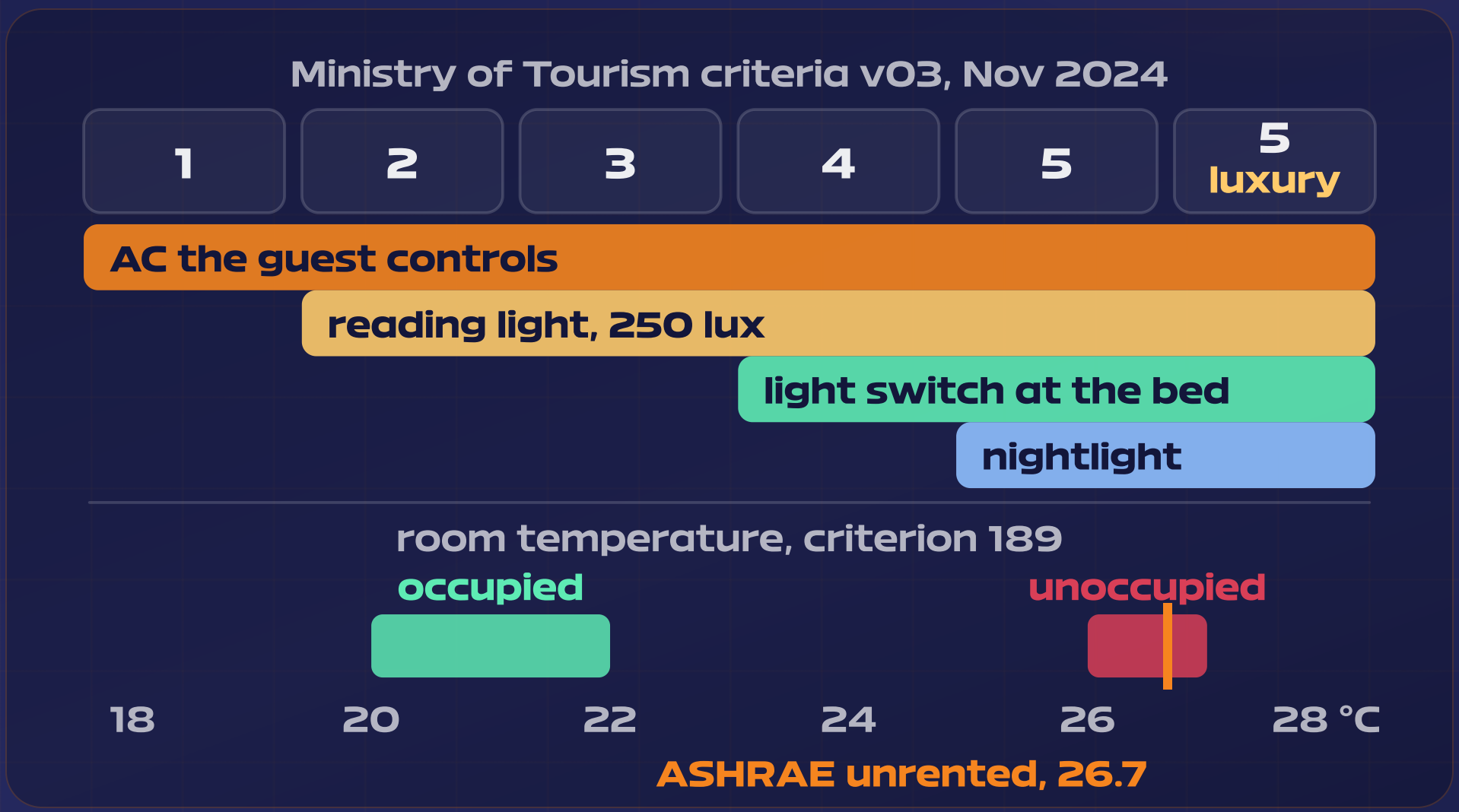
required by none of them

Across the credits reviewed, the regulated surface is lighting, switched receptacles, HVAC setpoint and ventilation, plus televisions in 189.1. **None of them requires** a room panel, scene presets, DND signalling, minibar sensing, an energy display, curtains or voice control. [1][2][11]

LEED v5 is the near miss: motorised blinds can serve its glare-control option. BREEAM Hea 01 is the gift to a bus, asking for separate zones in hallway, bathroom, desk and sleeping area. [11]

THE SAUDI ANSWER IS IN THE CLASSIFICATION

The Ministry writes the setback the code does not

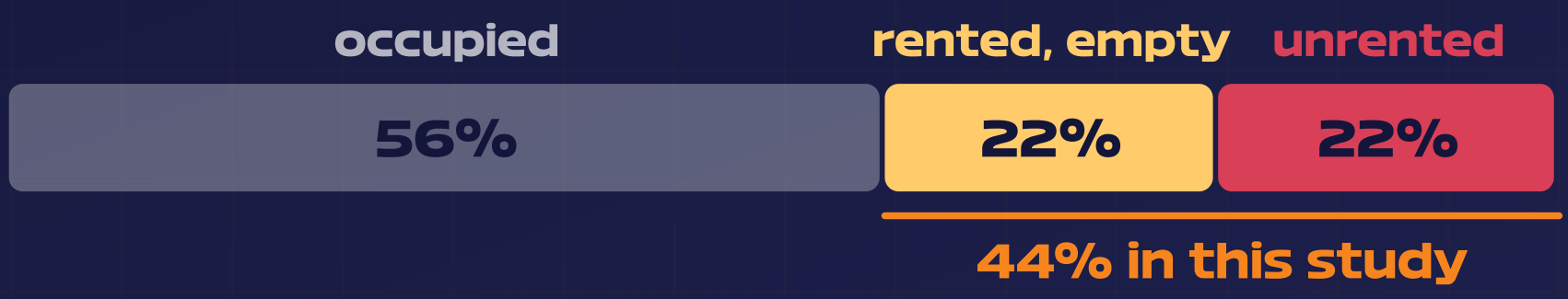


Saudi classification criteria v03 (November 2024) make **guest-controlled** in-room air conditioning mandatory in every category, and put numbers on it: 20 to 22 °C occupied, **26 to 27 °C** unoccupied. ASHRAE's unrented 26.7 °C sits inside that band. [10]

Licensing criteria, not an energy code. SBC 601 is: its free 2007 edition asks only for a master switch at the door, and 2024 is licensed, unread. [10]

WHERE A SAVING CAN COME FROM

One study's room-hours, split three ways



sold 77 to 79% of days, occupied 56 to 57%

In a metered study with occupancy logging, rooms were sold on 77 to 79% of days, but someone was in the room only 56 to 57% of the time. That left about **44% of room-hours** a control could act on. It is an opportunity window in that hotel, not a savings percentage. [6]

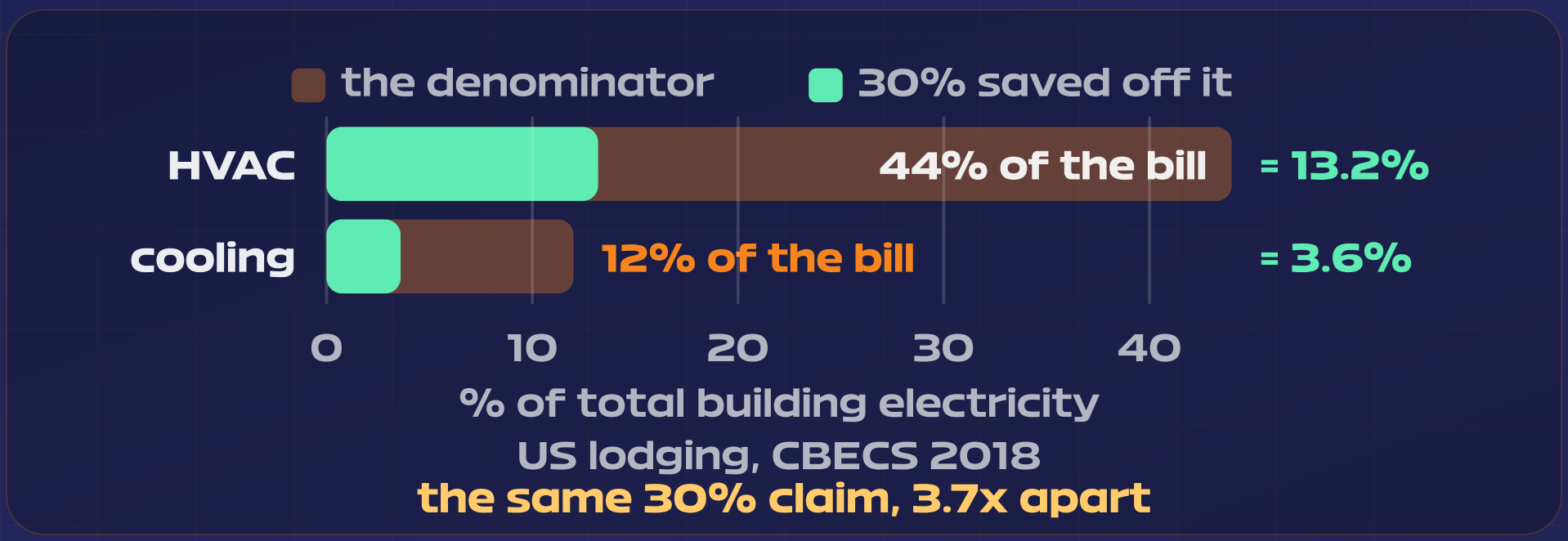


A corridor of sold rooms. Some are empty right now, and those hours are the only ones a control can act on.

Same technology: 27 to 32% HVAC savings in one hotel, 1 to 17% in an extended-stay hotel with higher occupancy. Depth of setback moved the number more than the sensor did. [6]

THE DENOMINATOR DECIDES

"30% of what?" is the whole question

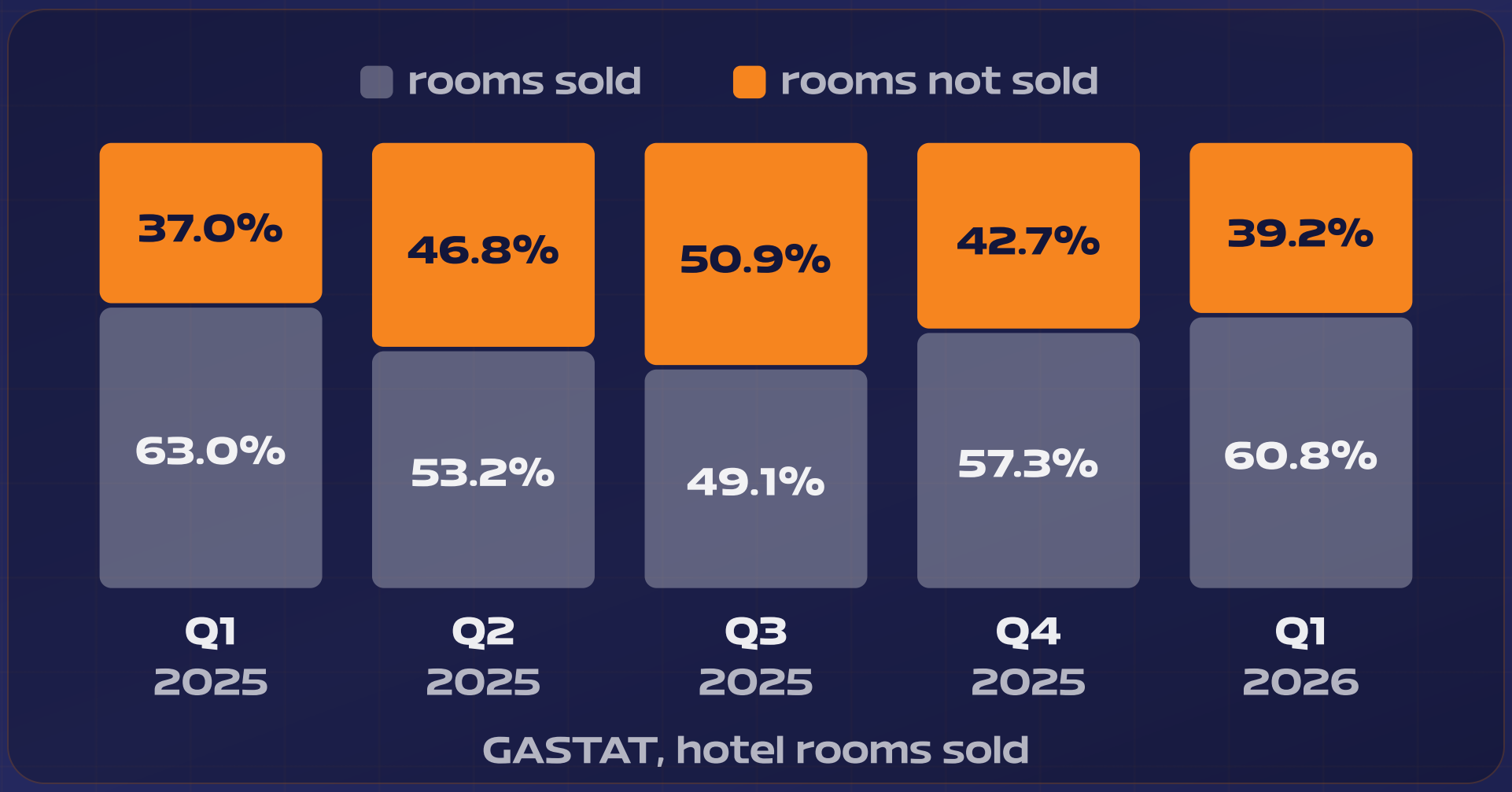


In US lodging, cooling is 12% of building electricity and all HVAC is 44% (CBECS 2018). So a 30% HVAC saving is **13.2% of total building electricity**, and a 30% cooling saving is 3.6%. And "up to 45%" is usually runtime, not kilowatt-hours. [6][7]

In the field evaluation behind these figures, savings fell to zero below a 20 °C daily average outdoor temperature, and retrofit numbers in the hot California zones ran about 3 times new-build ones. [6]

THE SAUDI NUMBER, READ HONESTLY

Unsold room-nights are the opportunity, not the saving



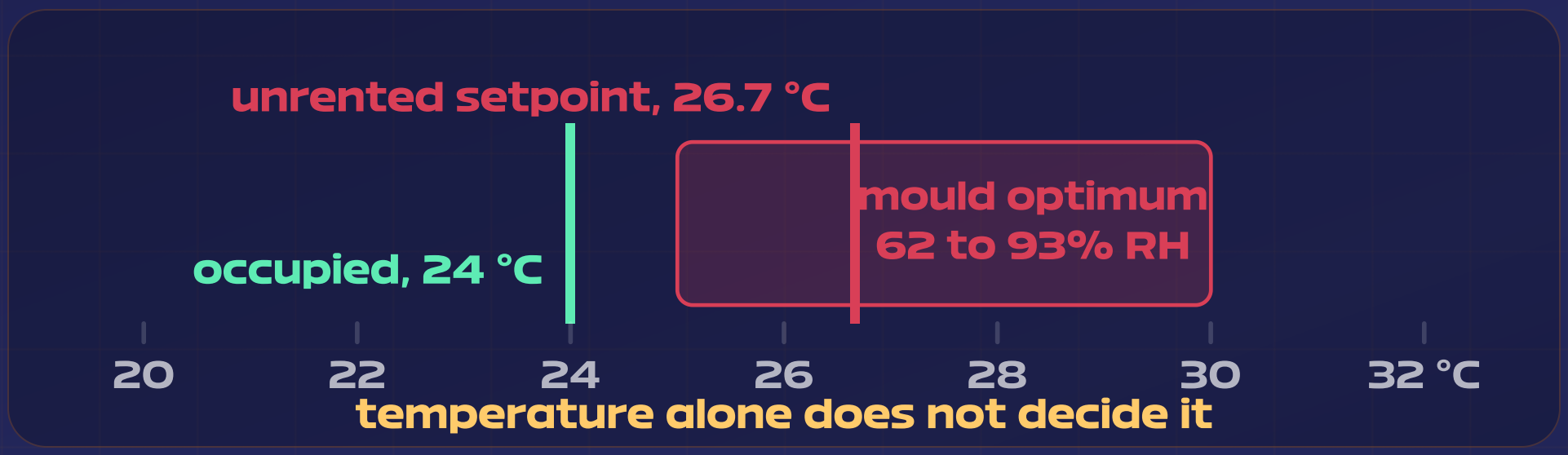
GASTAT, hotel rooms sold

GASTAT puts Saudi hotel room occupancy at 63.0% in Q1 2025, then 53.2%, 49.1% and 57.3% through the year, and 60.8% in Q1 2026, the latest quarter published. That is **rooms sold, not people in rooms**. It sizes how often a control has something to act on; by itself it proves no saving. [8]

Payback follows kilowatt-hours, not percentages: one US field study measured a real 25% cooling saving and still calculated a 27-year payback at $426 a room. [6]

MOISTURE, NOT TEMPERATURE

Warm is not the risk. Warm, humid and still is.

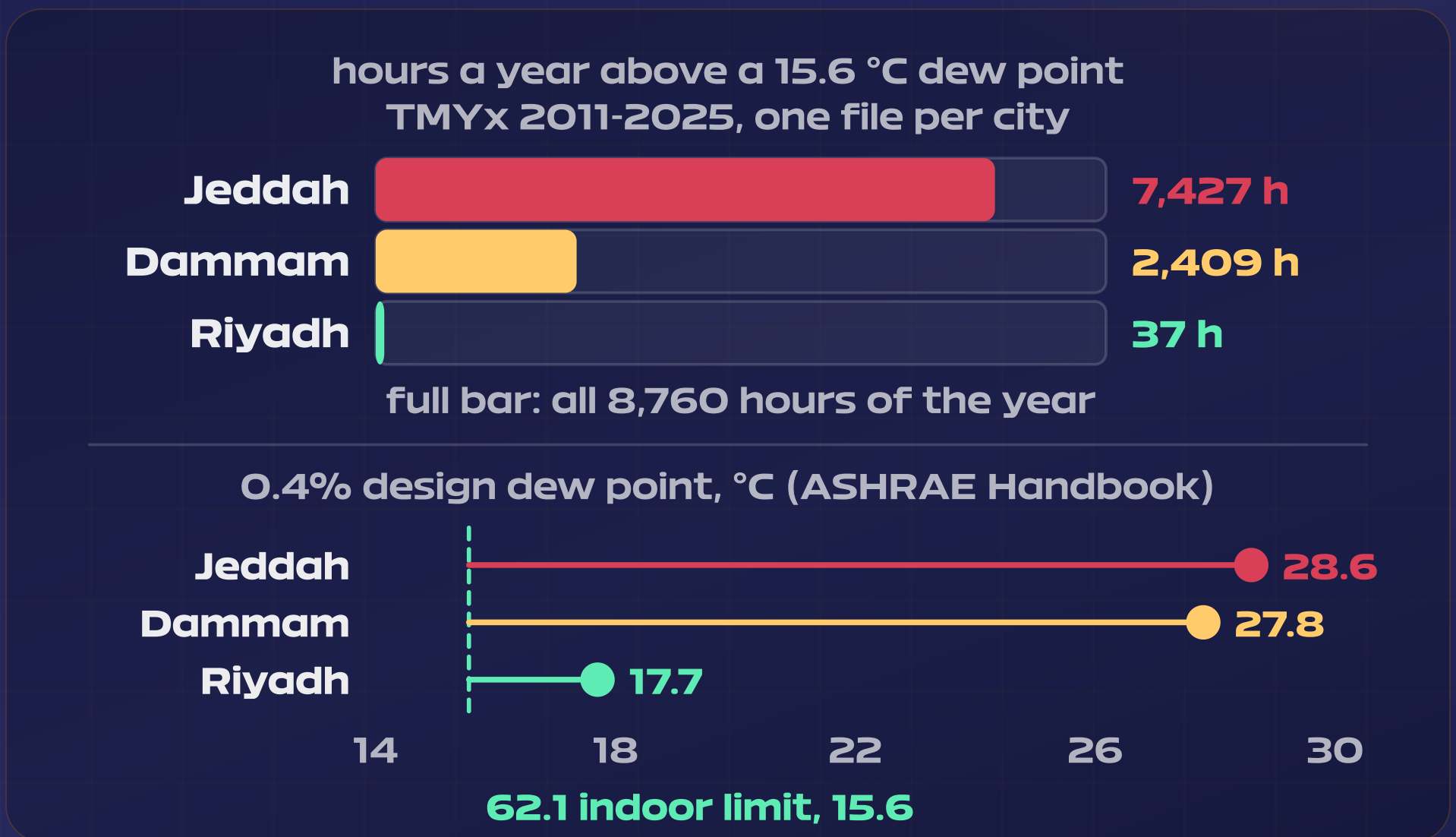


An unrented room at 26.7 °C is not a mould problem on its own. Growth needs moisture at a surface as well. Subject to the applicable edition's exceptions, ASHRAE 62.1 sets an indoor dew-point limit during occupied and unoccupied hours, and Addendum bk to 90.1-2019 permits dehumidification to keep running while the room is empty. [3][1]

The limit is a dew point, 60 °F (15.6 °C), not 65% RH: § 5.12, split into 5.12.1 by Addendum k to 62.1-2022. As written in Addendum ae to 62.1-2016 it binds whenever the outdoor dew point is above that value, and it carries exceptions, including overnight vacancies under 12 hours held below 65% RH. [3]

ONE COUNTRY, THREE ANSWERS

Setback depth is a coastal question

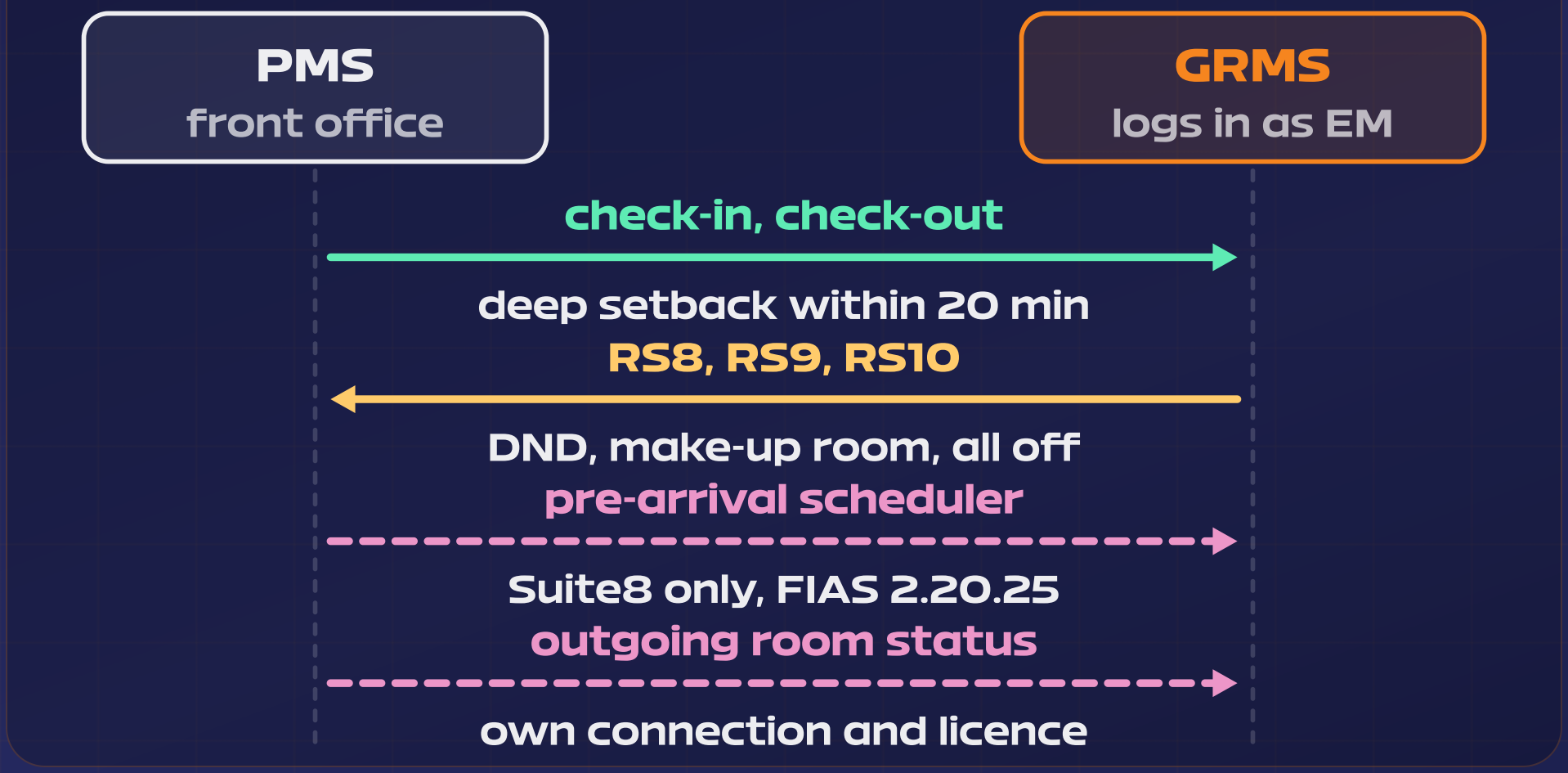


Counted over all 8,760 hours of one TMYx 2011-2025 file per city, the outdoor dew point sits above 15.6 °C for **7,427 hours a year in Jeddah**, 2,409 in Dammam and 37 in Riyadh. Inland you can set back deep and dry; on both coasts a temperature-only vacancy scene invites moisture. [9]

Illustrative climate analysis, **not a design condition**. Design values come from the Handbook for the actual station. [9][3]

WHAT CROSSES THE PMS LINK

Four messages, and two depend on your PMS

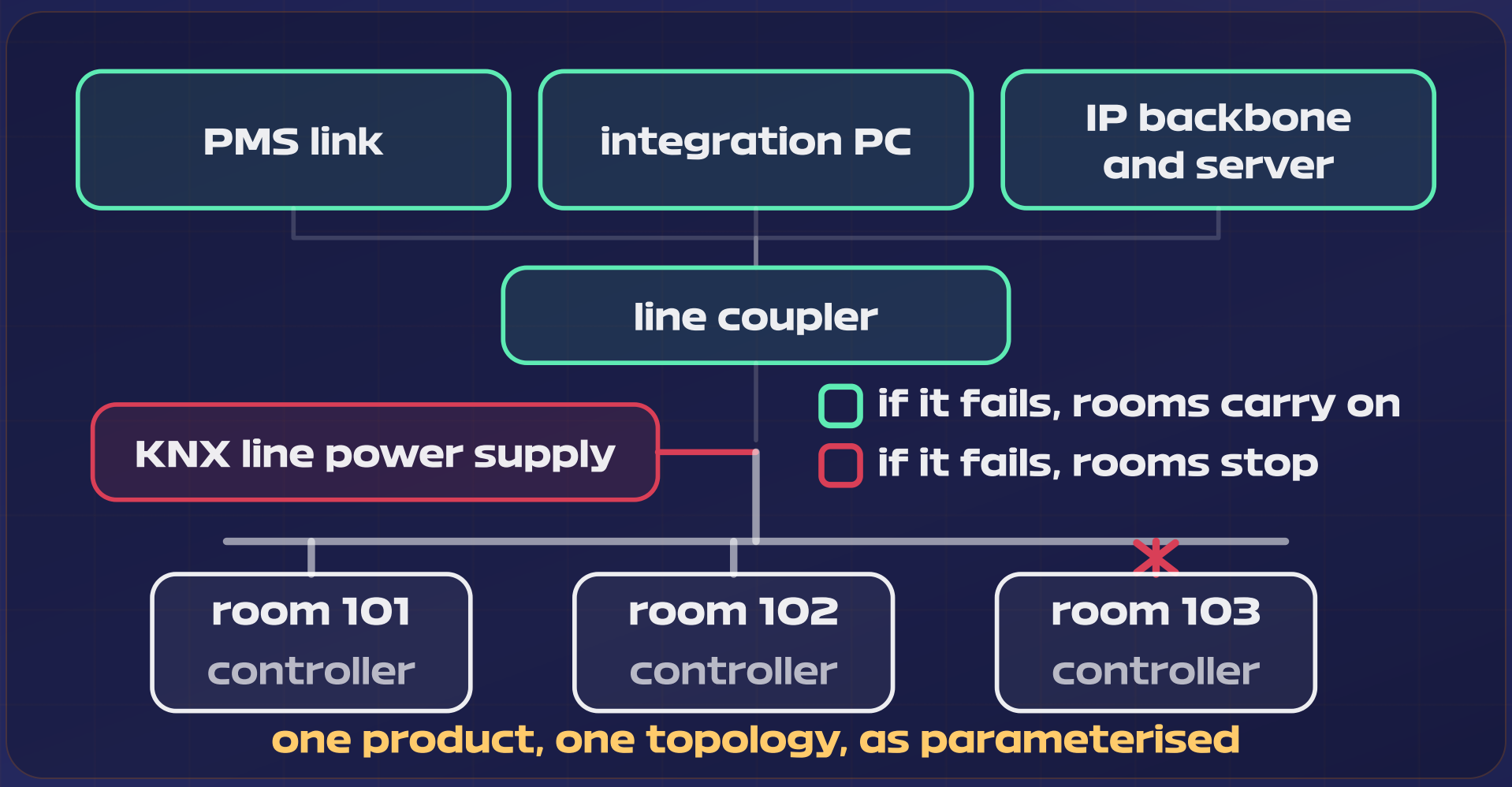


In Oracle's FIAS specification, release 2.20.25, a room system logs in as **EM, energy management**; there is no GRMS interface type. The pre-arrival scheduler is a Suite8 feature **OPERA does not support**; outgoing room status needs its own connection and licence. [5]

So the ready-room hour is an integration on OPERA, not a checkbox. Name the PMS, its release and who buys the licence. [5]

WHAT FAILS WHERE

A KNX room rides out the head-end, not its own power



ABB's RM/S 2.1 manual is explicit: the controller takes its power from the bus, and card-in lighting runs on internal links with no telegrams. Lose the PMS link, the integration PC, the network or a line coupler and the room keeps working; lose the **line power supply** or that room's bus cable and it does not. [4]

Relay fallback on bus failure is a parameter, not a given. The vendor's own rules belong in scope: rooms stand alone, software runs only non-vital functions, rooms never talk to each other. [4]

RETIRE THESE LINES

Five sentences that fail a code check

"Card-in, card-out is the core trigger"
90.1-2022 rejects the captive holder as the compliance method and deleted the HVAC sentence. Door access is untouched

90.1-2022

"Saves 30% energy"
30% of HVAC is 13.2% of total building electricity; 30% of cooling is 3.6%

13.2%

"Up to 45%"
Usually runtime. The same manufacturer quotes 18% on the bill

18%

"62.1 limits humidity to 65% RH"
It sets a dew-point limit, 60 °F (15.6 °C), § 5.12, with exceptions

15.6 °C

"Without a PMS, setback waits 16 hours"
16 hours is the latest the code allows, not a wait

≤ 16 h

And never quote a retrofit case study to a new-build specifier: in the hot California zones the retrofit number ran about three times the new-build one. [6]

WRITE THIS INSTEAD

The guest room clause that survives a handover

Name the three states
Setpoints and delays in minutes for occupied, rented but unoccupied, unrented

3 states

Evidence, not a holder
Door lock event, door contact and presence in combination, standby timer stated

3 inputs

Name the PMS link
Unrented status within 20 minutes; the ready-room hour as a named integration

20 min

Humidity by city
Dehumidify where the dew-point hours justify it; cite 62.1 by edition and exceptions

5.12

Stand-alone rooms
No central dependency; access control and life safety stay outside the scope

0 vital

Spares and warranty
One manufacturer publishes 10 years mechanical, 1 year electronics: ask for it

1 year

And ask where the integration PC lives, and who holds its licence at handover. [5]

SOURCES

Where each number comes from

[1] ASHRAE 90.1 §6.4.3.3.5, §9.4.1.3(b); Add. bk, bp, bd
[2] ASHRAE 189.1, guest room clause
[3] ASHRAE 62.1 §5.12 (5.12.1 since Add. k); Add. ae
[4] ABB RM/S 2.1 manual; Schneider PIR application guide
[5] Oracle IFC8 FIAS specification, release 2.20.25
[6] WCEC/SDG&E 2010; California CASE 2011; PG&E/AEC
[7] US EIA CBECS 2018, Table E5
[8] GASTAT tourism statistics, Q1 2025 to Q1 2026
[9] TMYx 2011-2025; ASHRAE Handbook design conditions
[10] MoT hotel criteria v03 (2024); SBC 601 (2007)
[11] LEED v4 and v5; BREEAM Hea 01; Mostadam HC-01 to HC-16

Setpoints, deadlines, the day trace and the dew-point split are reproduced from the published documents and weather data by grms_physics.py, which self-tests on every build. The standard contains no savings percentage; every percentage here is traced to the study that measured it.

PRACTICAL LIGHTING ENGINEERING

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