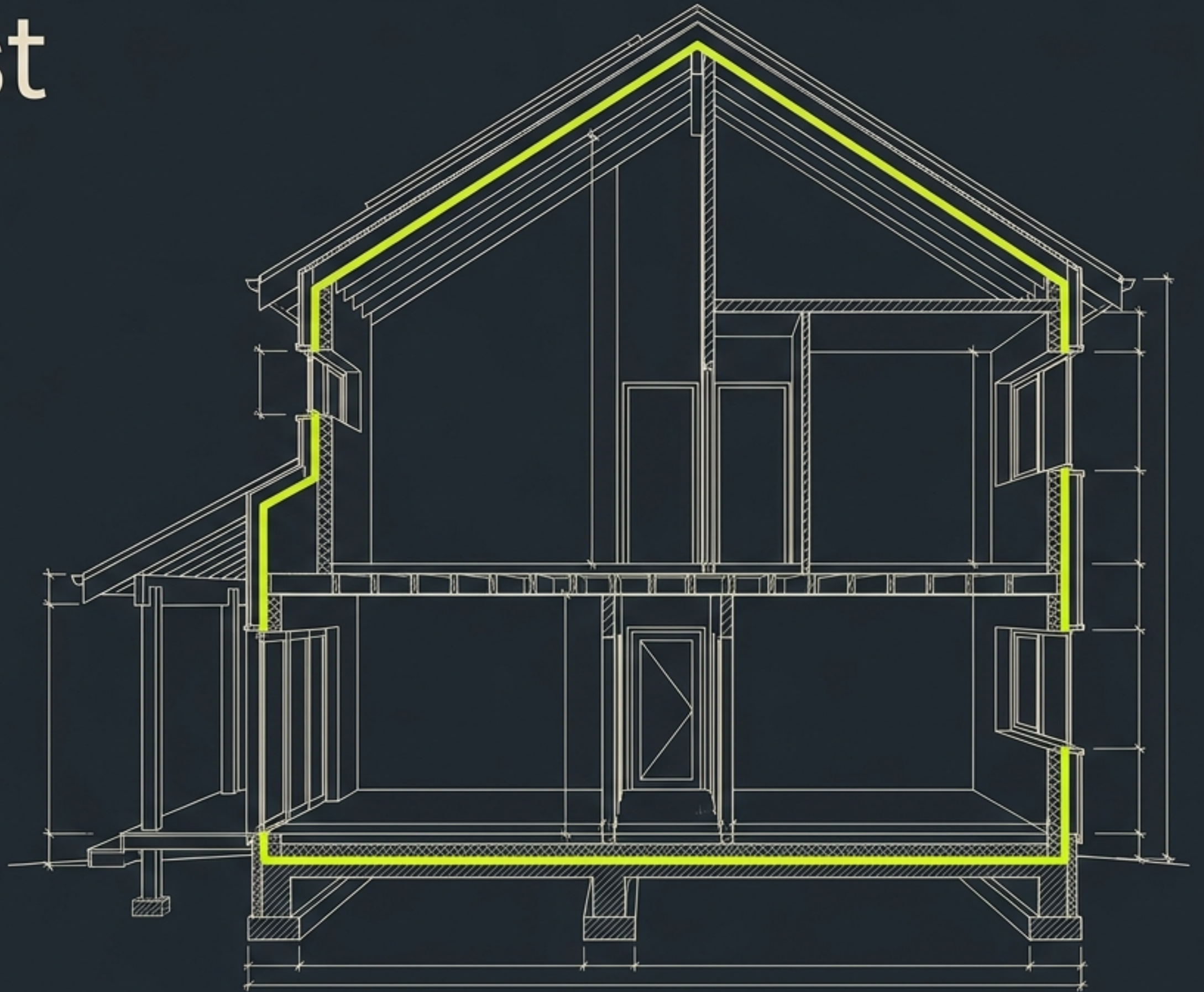


The True Cost of Comfort

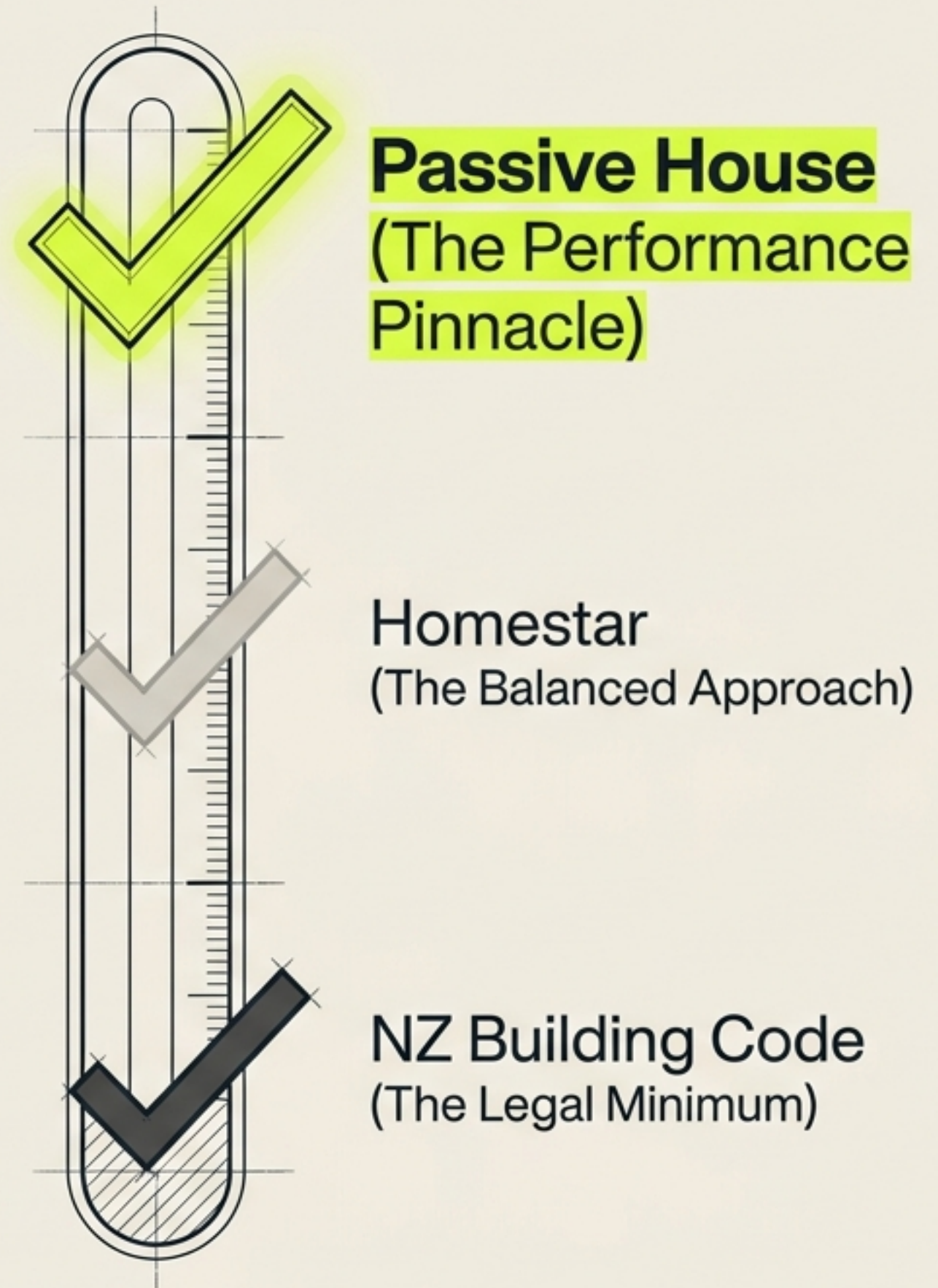
Evaluating the physics and financials of the Passive House standard for Nelson Tasman.

A building-science folio by
Ecotectural Home Builders.



The legal minimum is not a target.

97% of New Zealand homes are built merely to the minimum standard required by the Building Code. This code dictates the worst-performing home legally allowed to be built—it does not guarantee physiological comfort or optimal health.



The reality of the standard New Zealand home.

Data from the BRANZ HEEP2 national study reveals a stark gap between our perception of a healthy home and the physiological reality of our living environments.

1

16.1°C

Average night-time bedroom temperature (well below WHO healthy guidelines).

2

20%

Households where occupants can literally see their breath inside during winter.

3

50%

Homes reporting visible mould growth.

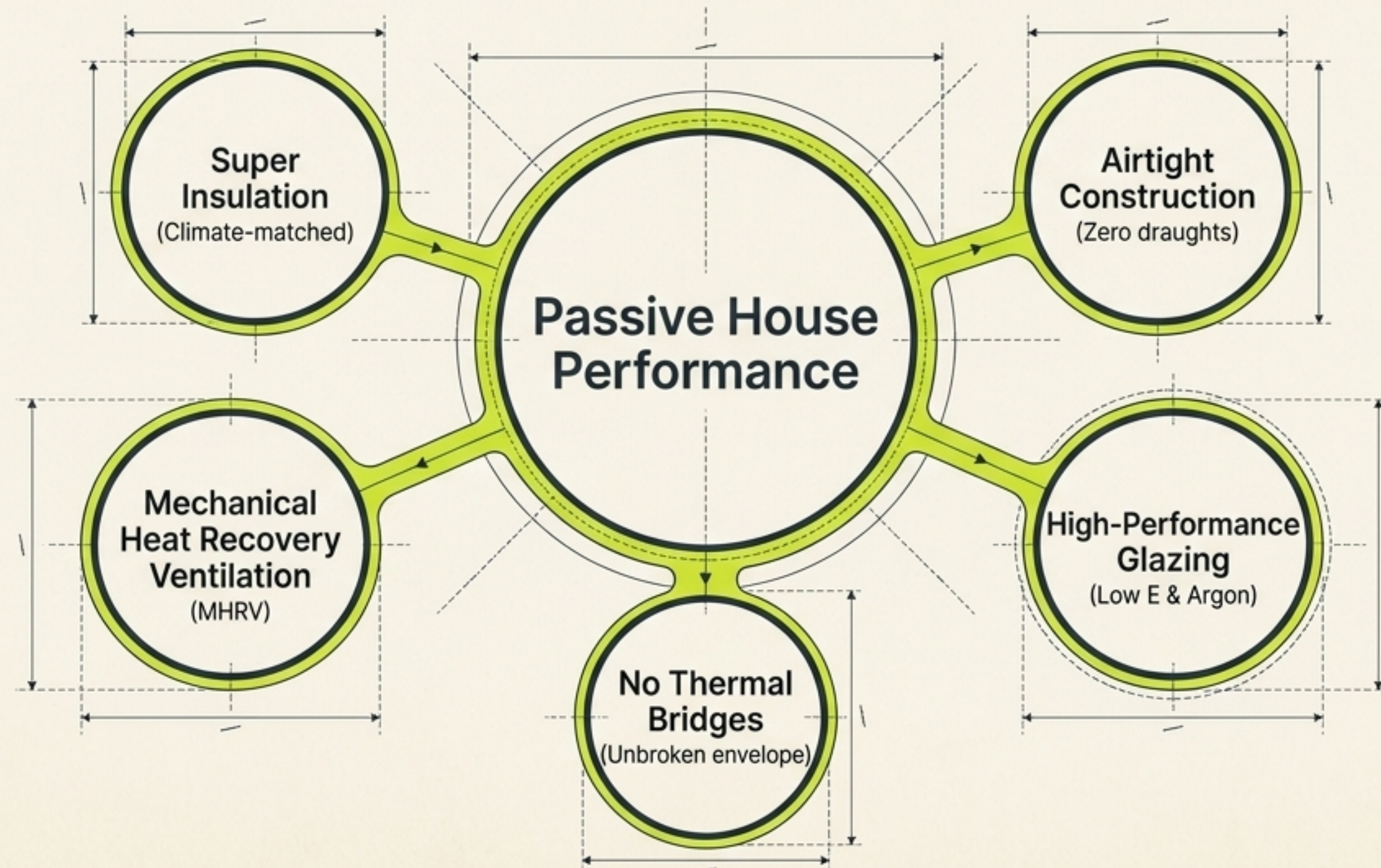
4

9 in 10

New Zealanders who mistakenly believe their home is a 'healthy place to live' despite experiencing cold, damp, and condensation.

The physics of a comfortable climate.

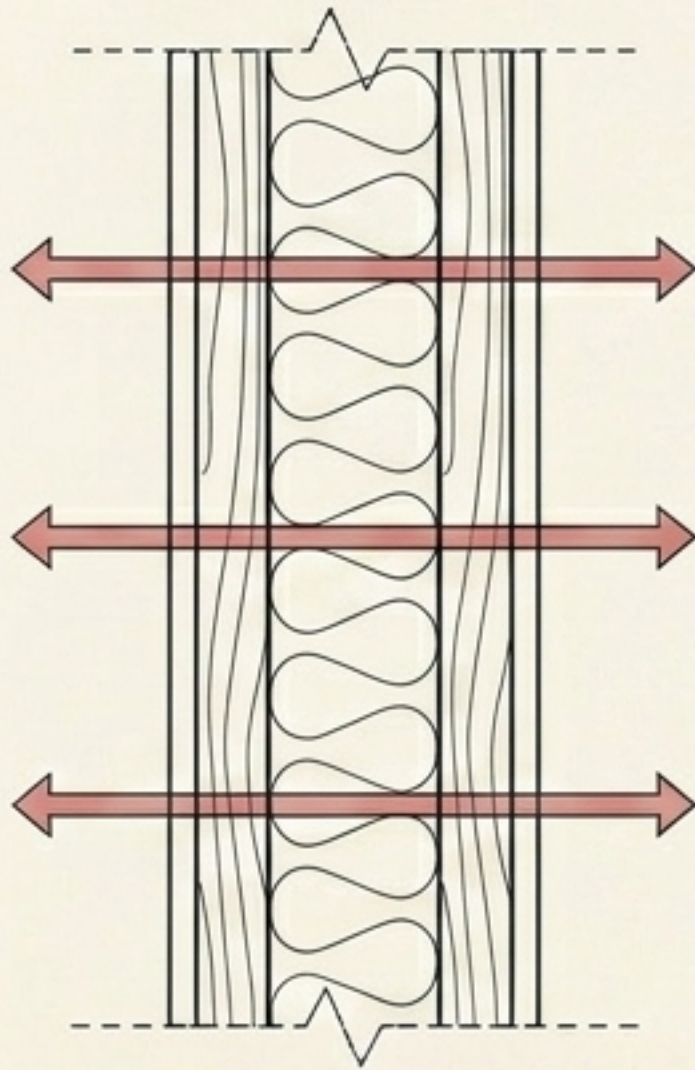
A Passive House is not a design aesthetic; it is an internationally recognized, physics-based performance standard. It relies on microscopic energy use to maintain a constant, healthy 20°C–25°C in every room, year-round.



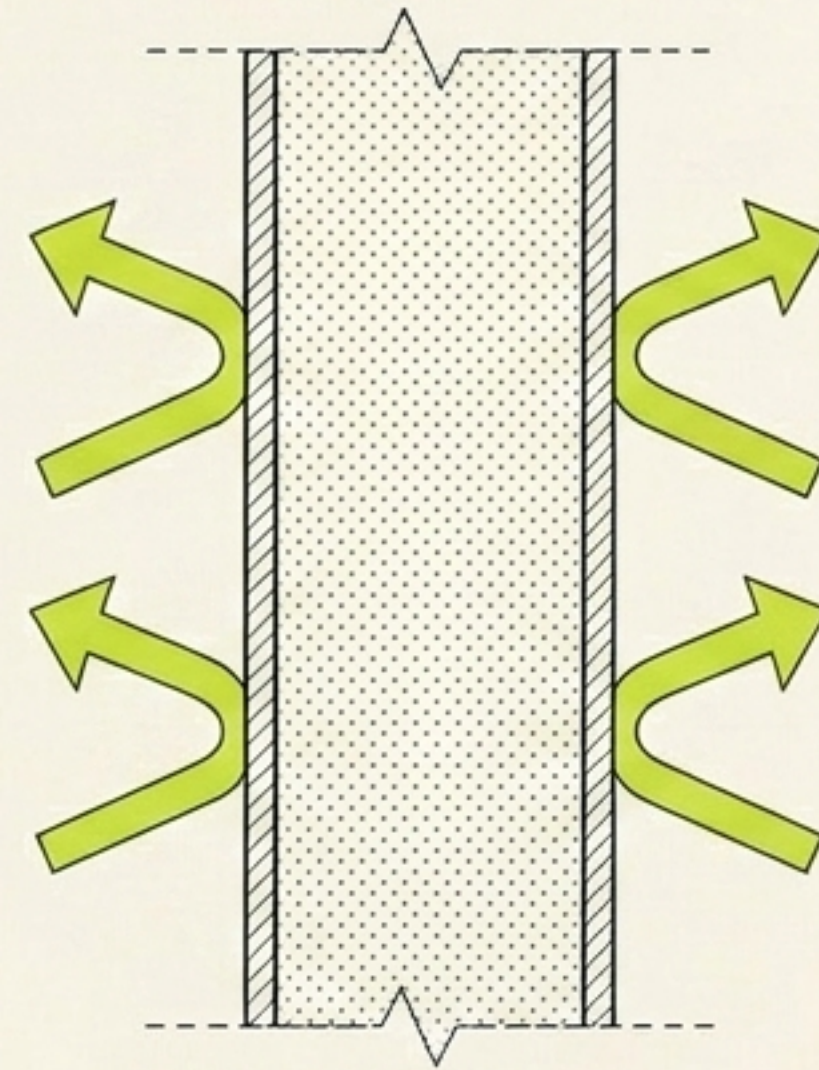
Engineering the unbroken envelope.

Traditional timber framing acts as a thermal bridge, leaking heat to the outside.

Replacing standard framing with **Formance** Structural Insulated Panels (SIPs) wraps the home in a continuous, highly insulated core, acting like a thermos flask.



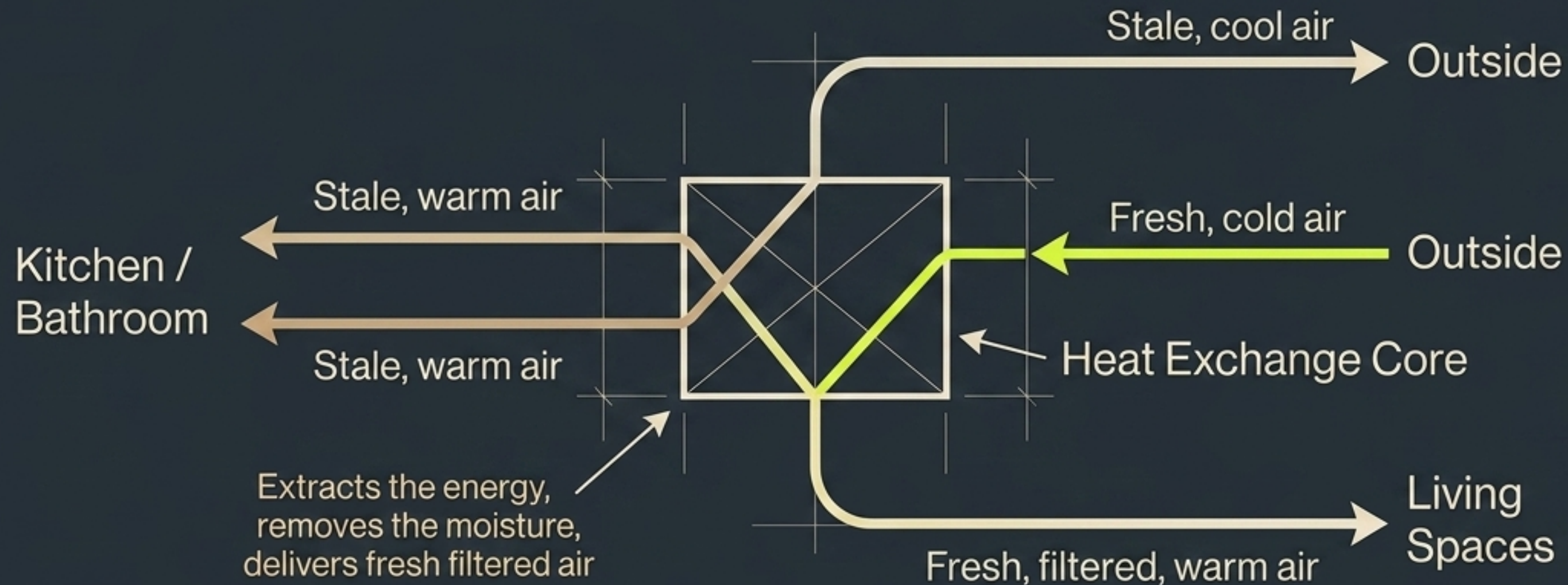
Standard Timber Frame



Formance SIP Core

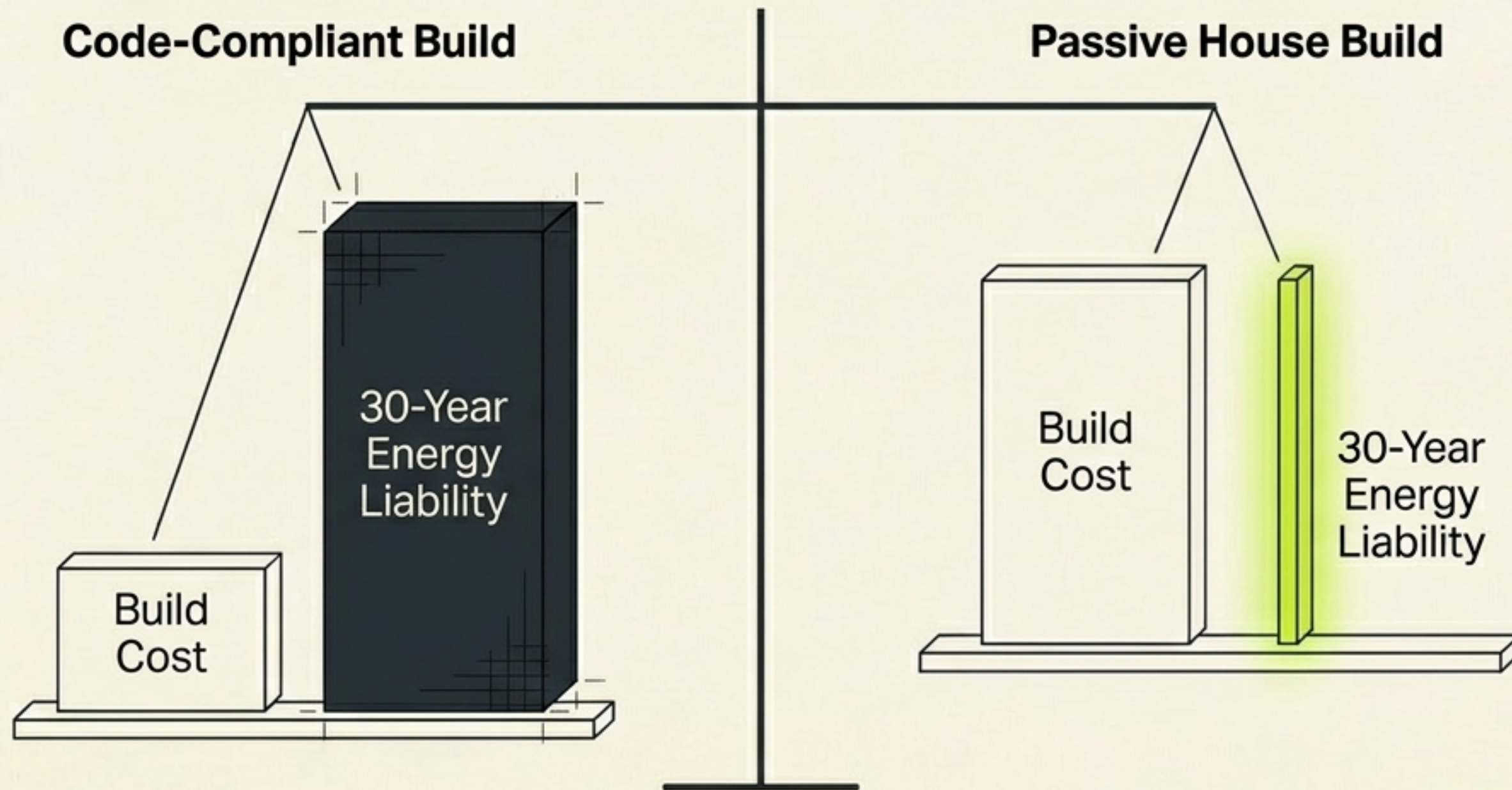
The anatomy of breathable air.

To dry out interior moisture (from cooking, washing, and breathing), a home must be ventilated. Instead of opening windows and losing valuable heat, an airtight home relies on Mechanical Heat Recovery Ventilation (MVHR).



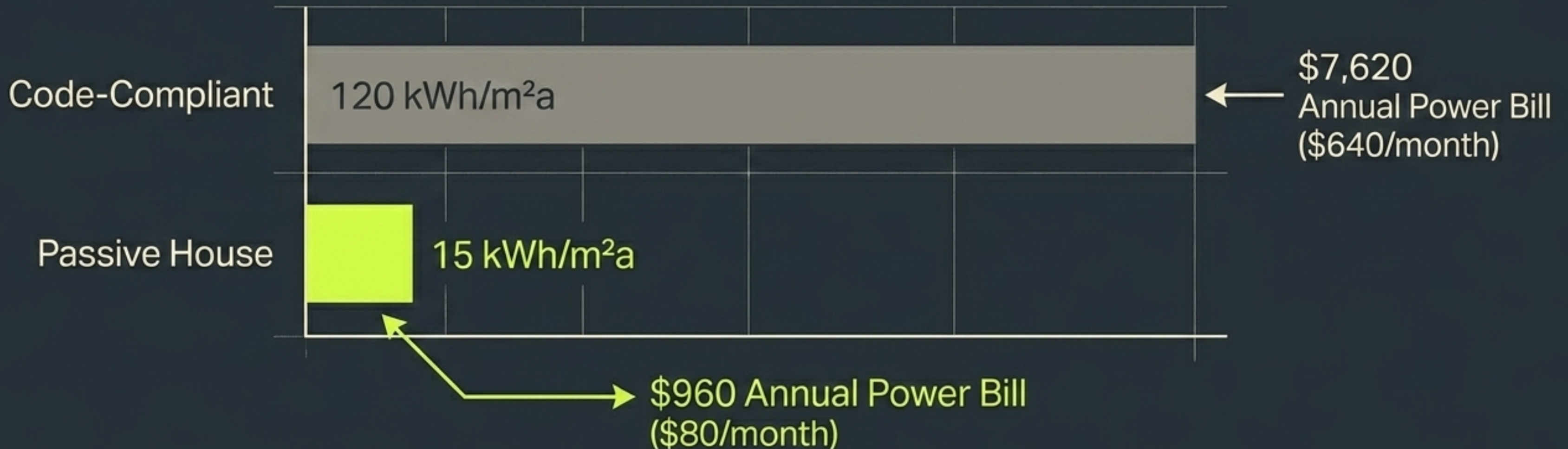
Reframing the cost of ownership.

We evaluate the value of a car based on its purchase price plus its fuel efficiency and running costs over time. Yet, we often judge housing purely on the initial build cost. The true cost of a home is the 30-year operational energy demand combined with the mortgage.



The 20°C energy equation.

To maintain a healthy, constant temperature of 20°C in a 200m² home, the difference in raw power consumption between the legal minimum and the Passive House standard is immense.

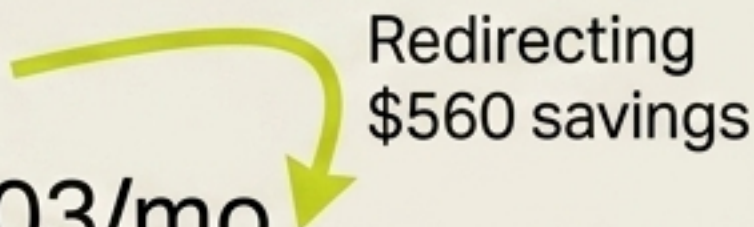


The 30-year mortgage split-screen.

A **Passive House** costs approximately 10% more to construct. But when the monthly energy savings are redirected into the mortgage repayments, the 'more expensive' house rapidly becomes the superior financial asset.

(Based on 200m², 7% interest, 20% deposit)

Standard Home	Passive House
Build: \$640k	Build: \$705k
Loan: \$512k	Loan: \$564k
Power: \$640/mo	Power: \$80/mo
Mortgage: \$3,407/mo	Mortgage: \$4,303/mo
Total Monthly Outgoing: \$4,047	Total Monthly Outgoing: \$4,047



The time value of efficiency.

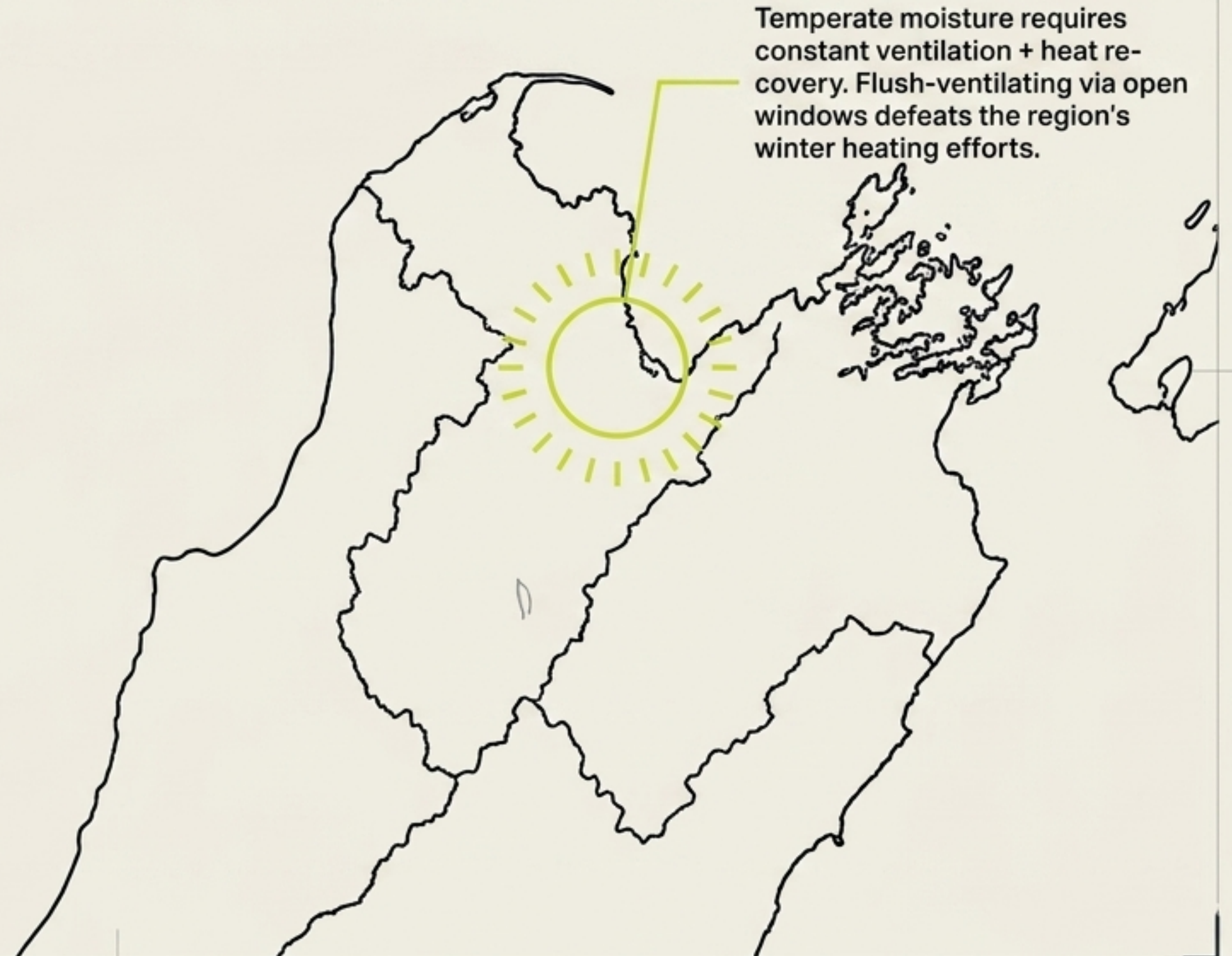
By investing in the building envelope upfront and redirecting the operational energy savings into the principal, the Passive House standard effectively buys back nearly a decade of your financial life.

111 Months Early

By redirecting \$550/month in power savings, the Passive House mortgage is paid off **9.25 years faster** than the cheaper code-compliant home.

Contextualizing for Nelson Tasman.

Temperate climates like Nelson Tasman face unique moisture challenges. The outside winter air here often contains more moisture than colder southern regions. To prevent indoor damp-dampness, incoming air must be heated to lower relative humidity. An airtight envelope with MVHR is the only way to manage this efficiently.



The verdict.

A certified Passive House is not a luxury expense; it is a calculated hedge against rising energy costs, structural degradation, and poor respiratory health.

Health	Physics	Wealth
16.1°C to 20°C+. Eradication of visible mould and cold-induced dampness.	15 kWh/m²a. SIPs core and MVHR eliminate thermal bridging and stale air.	111 months early. Higher capital value, lower lifetime operational liability.

Ecotectural Home Builders. Engineering the true cost of comfort.