



Humidity, Heating & NZ's Ventilation Rules

Why managing moisture requires more than opening a window

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Many New Zealand homeowners believe that opening a window — or installing a bathroom fan — is enough to solve a humidity problem. In reality, effective moisture management requires a more complete approach: the right combination of ventilation, heating, and airtightness working together.

This guide, the second in our four-part series, explains the physics of humidity, how New Zealand's climate makes moisture control especially challenging, and what the current building rules actually require — and where they fall short.



T H E S C I E N C E

The Physics of Relative Humidity

Relative humidity (RH) measures how much moisture the air holds compared to its maximum capacity at a given temperature. The key principle: warm air can hold significantly more moisture than cold air.

When cold outdoor air enters your home and warms up — without adding any extra moisture — its relative humidity drops considerably. Outdoor air at 10°C and 80% RH, warmed indoors to 20°C, drops to approximately 45% RH. This is why heating and ventilation work together as a system: heating the incoming air is what actually reduces indoor humidity.

“When warm indoor air meets a cold surface, moisture condenses. That condensation is where mould begins.”

The dew point is the temperature at which air becomes fully saturated and moisture begins to condense on surfaces. In a typical New Zealand winter, this can occur on uninsulated windows, exterior walls, and inside roof and wall cavities — invisible to occupants until the damage is done.

W I N T E R C O N D I T I O N S

Why Winter Is the Critical Season

During a typical New Zealand winter, outdoor air often sits at 90–100% relative humidity. Simply ventilating with this air — without any form of heat recovery — replaces indoor dampness with outdoor dampness. Many homeowners notice their humidity problems worsen when they open windows in winter: they are introducing cold, moisture-laden air that then condenses on walls and windows as it warms indoors.

Indoor moisture sources compound the problem. A single shower adds approximately 2 litres of water vapour to the air. Cooking, breathing, and drying laundry indoors each contribute further. Without continuous extraction and fresh air supply, this moisture accumulates — raising RH, promoting condensation, and creating ideal conditions for mould.

2L

of moisture per
shower

A typical household generates 10–15 litres of water vapour every day from cooking, breathing, showering, and drying clothes. Without continuous ventilation, all of that moisture stays in the air — and eventually finds a cold surface to condense on.

SUMMER CONDITIONS

Summer Humidity Is a Different Challenge

While heating matters less in summer, ventilation remains equally important. In New Zealand's northern regions — Northland, Auckland, the Waikato — summer outdoor humidity stays persistently high. Without adequate airflow, homes become stuffy and uncomfortable, and humidity can remain elevated even when temperatures are warm.

Mechanical Ventilation with Heat Recovery (MVHR) systems address this with a 'summer bypass' mode: the system bypasses the heat exchanger and draws in cooler night air directly. This allows the home to flush out accumulated heat and humidity overnight, without introducing the energy penalty of full heat recovery.

In particularly humid regions, pairing an MVHR system with a dehumidifier or air conditioning unit provides the most complete year-round comfort solution.

REGULATORY CONTEXT

What NZ's Building Rules Actually Require

New Zealand's approach to ventilation has improved over time — but significant gaps remain between the legal minimum and what is actually needed for a healthy, durable home.

- **Building Code Clause G4:** sets the legal minimum. Kitchens must have extractor fans capable of 50 L/s; bathrooms require fans rated at 25 L/s; and living areas must have openable windows equal to 5% of floor area. These standards focus on localised extraction — not whole-house air exchange.
- **No heat recovery requirement:** the Code is silent on heat recovery. In a country where winter heating costs strain household budgets, there is no legal requirement to recover the energy from extracted air — a significant omission.
- **No filtration requirement:** there is no requirement to filter incoming outdoor air, leaving occupants exposed to pollen, vehicle emissions, and wood-smoke pollution from neighbours.
- **Reliance on occupant behaviour:** openable windows assume people will actually use them. In winter, most New Zealanders keep windows shut — for comfort, security, and energy savings — making this provision largely ineffective.

"A home that fully complies with the NZ Building Code can still suffer from chronic condensation, mould, and poor indoor air quality."

RENTAL PROPERTIES

The Healthy Homes Standards: Progress with Gaps

Introduced in 2021, the Healthy Homes Standards require landlords to install extractor fans in kitchens and bathrooms, either hardwired to run continuously or triggered by humidity sensors. Openable windows in living areas remain mandatory.

While these changes improve conditions in rental properties, they do not resolve the fundamental issues. Extractor fans alone create negative air pressure, drawing unfiltered air through gaps in the building envelope — introducing dust, pests, and outdoor pollutants while undermining energy efficiency. And because these standards only apply to rental properties, owner-occupied homes face no requirements at all beyond the bare Building Code minimum.

The Standards also make no provision for summer ventilation. In northern regions where humidity stays high year-round, managing moisture in winter only leaves homes prone to stuffiness and mould growth in summer months.

PRACTICAL GUIDANCE

What Effective Humidity Control Actually Looks Like

For New Zealand homes, effective moisture management combines three elements working in concert:

- **Continuous ventilation:** moisture must be removed from wet areas (bathrooms, kitchens, laundry) and replaced with fresh, pre-heated air across the whole house — not just in isolated rooms.
- **Adequate heating:** maintaining indoor temperatures above 18°C in living areas and 16°C in bedrooms ensures that incoming air can hold moisture without condensing on cold surfaces.
- **Humidity monitoring:** keeping relative humidity between 40% and 60% prevents both mould growth (above 60%) and respiratory discomfort (below 40%). A simple digital hygrometer costs under \$30 and provides immediate feedback.
- **Whole-house approach:** addressing only kitchens and bathrooms leaves bedrooms — where occupants spend 8+ hours breathing — without fresh air supply. Whole-house MVHR is the only solution that addresses every room simultaneously.

KEY FACTS AT A GLANCE

Outdoor winter RH	Often 90–100% in NZ — ventilating without heat recovery replaces indoor dampness with outdoor dampness
Daily moisture load	A typical NZ household generates 10–15 litres of water vapour per day from normal activities
Shower moisture	A single shower adds approximately 2 litres of water vapour to the indoor air
Healthy RH range	40–60% relative humidity indoors — below 60% prevents mould; above 40% prevents respiratory irritation
Clause G4 requirement	Kitchen 50 L/s, bathroom 25 L/s extraction, plus openable windows — no heat recovery or filtration required
Healthy Homes gap	Standards apply only to rental properties; owner-occupied homes face no ventilation requirements beyond G4

COMING UP IN PART 3

Your Ventilation Options Explained

Part 3 cuts through the confusion: a plain-English comparison of every ventilation solution available — from opening windows and extraction fans to positive pressure systems, decentralised heat recovery, and full MVHR. Understand what you have, what it does, and what's possible.



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