Chimney Guys

RESEARCH REPORT

Authorised Burners and Air Quality Compliance: A Comprehensive Briefing

Executive Summary

Smoke from domestic home heating remains a primary contributor to air pollution across New Zealand, particularly in regions like Waitaha Canterbury and Otago. To address this, the Ministry for the Environment (MfE) and various regional councils have established strict National Environmental Standards (NES) for Air Quality. These regulations govern the efficiency and emission rates of solid fuel burners, categorizing them into tiers such as Ultra-Low Emission Burners (ULEB) and Low Emission Burners (LEB).

This document synthesizes current standards, regional variations in Canterbury and Otago, and operational best practices. It outlines the technical requirements for burner authorization—specifically for properties under two hectares—and details the financial and advisory support systems available to assist residents in transitioning to cleaner heating solutions.

Analysis of Key Themes

1. Categorization and Technical Standards

Burners are classified based on their particulate matter (PM) emissions and thermal efficiency. While national standards provide a baseline, regional councils often implement more stringent requirements.

Classification	Emission Standard	Efficiency Standard	Testing Method
ULEB (Ultra-Low)	< 0.4 g/kg or 38 mg/MJ	$\ge$ 65%	Canterbury Method 1 (CM1)
LEB (Low)	< 1.0 g/kg	$\ge$ 65%	AS/NZS 4012 & 4013
Clean Air Burner	< 1.5 g/kg	$\ge$ 65%	AS/NZS 4012 & 4013
Rural Burner	> 1.5 g/kg	No Specification	Generally untested

2. Regional Regulatory Landscapes

Compliance requirements vary significantly depending on the specific "Air Zone" or "Clean Air Zone" where a property is located.

- **Canterbury Region:** Environment Canterbury (ECan) permits ULEBs to be installed and used indefinitely under the current Air Plan because they are tested under "real-life" operating conditions. LEBs are being phased out in most Clean Air Zones.
- **Otago Region:**
  - **Air Zone 1 (Alexandra, Arrowtown, Clyde, Cromwell):** Burners must achieve an emission rate of < 0.7 g/kg and $\ge$ 65% efficiency.
  - **Air Zones 2 and 3:** These follow the MfE baseline of < 1.5 g/kg and $\ge$ 65% efficiency.
- **The Two-Hectare Rule:** Nationally, wood burners installed on properties of less than two hectares must meet the NES for Air Quality (emission < 1.5 g/kg and efficiency $\ge$ 65%) unless local rules are more restrictive. Properties over two hectares are generally permitted to use "Rural" burners.

3. Operational Efficiency and Maintenance

The environmental impact of a burner is determined not only by its design but also by user behavior. Inefficient burning results from "dampening down" fires overnight, overloading the firebox, or using substandard fuel.

- **The "Burn Dry, Breathe Easy" Initiative:** Central to Otago's strategy, this emphasizes that moisture content in wood must be below 25%.
- **Maintenance:** Flues should be swept annually to improve airflow and prevent chimney fires.
- **Prohibited Materials:** Burning treated timber, household waste, plastics, or "green" (unseasoned) wood is prohibited as it releases toxic pollutants.

Important Quotes with Context

On Air Quality and Health

> *"Smoke from home heating is a major contributor to air pollution in Waitaha Canterbury. To help improve air quality, we ensure burners pass strict emissions tests before authorising them for use in our region." — Environment Canterbury Guidelines*

Context: This highlights the regulatory rationale for the ECan authorization list. The council views domestic heating as a primary environmental lever.

On Testing Rigor

> *"ULEBs are tested using the Canterbury Method 1 (CM1), which uses strict real-life operating conditions... some LEBs listed below seem to have emissions low enough to qualify as ULEBs, but they are only authorised as ULEBs if they appear on the ULEB list... [this] does not mean they would pass the CM1 test." — ECan Technical Notes*

Context: This clarifies the distinction between laboratory-style testing (AS/NZS) and the more rigorous "real-world" testing (CM1) required for the highest classification.

On Longevity and Use

> *"Under the current Air Plan, [ULEBs] can be installed and used indefinitely in Canterbury." — Environment Canterbury Air Plan*

Context: This serves as a primary incentive for homeowners to invest in more expensive ULEB technology, providing long-term regulatory certainty that is not granted to LEBs.

On Prohibited Fuels

> *"Burning these kinds of materials can release harmful toxins into the air: Treated wood, off cuts from building sites... Old decking, Rubbish, Green waste, Plastic." — Otago Regional Council Advice*

Context: This underscores that even an authorized burner becomes a source of pollution if used with inappropriate fuel.

Support Systems and Financial Assistance

Several programs exist to assist homeowners, particularly those in low-income brackets or living in older housing stock, to upgrade their heating:

- **EECA Warmer Kiwi Homes:** Provides subsidies covering 80–90% of insulation costs and 80% of heating appliance costs (capped at $3,000) for eligible homeowners.
- **Cosy Homes Trust (Otago):** Offers free healthy homes education and referrals for residents in cold or unhealthy housing.
- **Aukaha Better Homes Programme:** Targets whānau with children or pregnant women experiencing housing-related illnesses, providing Home Performance Assessments.
- **EnergyMate:** A coaching service provided by Presbyterian Support Otago to help whānau optimize electricity use and reduce power bills.
- **Habitat for Humanity:** Offers interest-free loans of up to $20,000 for essential home repairs, including heating and insulation upgrades.

Actionable Insights

For Homeowners

- **Verify Authorization:** Before purchasing a burner, cross-reference the model against the MfE Authorised Wood Burner list and regional-specific lists (ECan/ORC) to ensure it is legal for your specific property size and Air Zone.
- **Check Property Age:** If using an existing LEB in a Canterbury Clean Air Zone, identify its installation date; many are phased out once they reach 15 or 20 years of age.
- **Fuel Preparation:** Procure firewood before Christmas to ensure it has sufficient time to dry for the following winter. Use a moisture meter to confirm a reading of less than 25%.
- **Secondary Devices:** Investigate approved secondary emission reduction devices, which may allow for the extended use of certain low-emission burners beyond their standard phase-out dates.

For Manufacturers and Suppliers

- **Authorization Requirements:** Manufacturers must ensure burners undergo testing (either AS/NZS or CM1) by accredited agencies to be included on regional lists.
- **Fidelity to Design:** Any unapproved modifications to an authorized burner may render it non-compliant, leading to legal issues for the installer or homeowner.

For Property Developers and Landlords

- **Building Consents:** Ensure that any heating installation complies with the Building Act 2004. In Dunedin, the Eco-design advisor service provides free consultations for new builds and renovations.
- **Rental Compliance:** Landlords should leverage programs like the Dunedin City Council's free eco-design service to ensure properties meet healthy home standards efficiently.