



# Proposed amendments to the National Environmental Standards for Air Quality

PARTICULATE MATTER AND MERCURY EMISSIONS

Summary of submissions



Ministry for the  
**Environment**  
*Manatū Mō Te Taiao*

New Zealand Government

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# Introduction

## Amending the National Environmental Standards for Air Quality

Although Aotearoa New Zealand's air quality is generally good, many places in New Zealand have poor air quality. Human activities and natural sources emit gases and particles into the air. Some of these emissions can reduce air quality and harm our health, our environment and our economy.

In New Zealand, particulate matter is the air pollutant of most concern to human health. Exposure can cause disease and premature death from respiratory and cardiovascular causes, and exacerbate asthma and emphysema.

Fine airborne particles, smaller than 2.5 microns (PM<sub>2.5</sub>) are especially harmful. They have a direct causal link to premature mortality.

## Sources of PM<sub>2.5</sub> in New Zealand

In New Zealand, PM<sub>2.5</sub> tends to be more closely associated with human activities, whereas PM<sub>10</sub> can have a substantial natural component. As reported in *Our air 2018*, human sources of particulate pollution in New Zealand are mainly from combustion. The main source of PM<sub>2.5</sub> is burning wood for domestic heating. Other important sources are:

- burning wood and coal for industrial process heat, for instance, with wood or coal-fired boilers
- transport, including exhaust emissions and road dust
- agricultural burning.

Natural sources include sea salt, pollen, volcanic eruptions and bushfires.

## What the current standards regulate

The regulations aim to protect New Zealanders from exposure to air contaminants.

The Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (NESAQ) regulate specific activities that discharge toxins and dioxins to the air, and set ambient air quality standards for a range of contaminants. These include particulate matter measuring 10 microns or less (PM<sub>10</sub>), nitrogen dioxide, sulphur dioxide, carbon monoxide and ozone.

Over the past 15 years, regional councils have applied these regulations, successfully reducing air pollution in many areas. This has improved public health, and most New Zealanders now enjoy air quality that complies with the regulations.

## Why amend the standards?

### Reduce discharges of PM<sub>2.5</sub>

It is timely to update the standards to reflect the large body of science about the health impacts of PM<sub>2.5</sub> that have developed since the ambient PM<sub>10</sub> standards were introduced in 2004.

Shifting the focus from larger particles (PM<sub>10</sub>) to smaller (PM<sub>2.5</sub>) would help to address discharges from human rather than natural sources.

### Regulate new domestic solid fuel burners

Amending the NESAQ would also address loopholes in standards for emissions from domestic heating. The current standards for new burners installed in homes after 2005 only apply to wood burners used for space heating. Other types of new solid-fuel burners are currently excluded.

Increasing the stringency of the domestic burner standards will help address New Zealand's major source of PM<sub>2.5</sub>.

### Meet the Minamata Convention on Mercury

New Zealand is working to meet its commitments under the Minamata Convention on Mercury. Amending the NESAQ would also provide an opportunity to meet these commitments.

## What the amendments would do

The scope of the proposed amendments is limited. They would:

- set new standards for ambient fine particles
- amend the design standards for new domestic solid fuel burners
- prohibit the use of mercury in certain industrial processes
- require use of international best practice guidance for certain mercury emission sources.

This would ensure appropriate and targeted regulation of New Zealand's main source of particulate pollution, and help New Zealand meet its commitments under the Minamata Convention on Mercury.

This document outlines the submissions on the proposed amendments.

# What the Government proposed

## Summary of proposals

The NESAQ is an instrument under the Resource Management Act 1991 (RMA). It sets an acceptable minimum level of health protection for all New Zealanders and the environment.

## More information

- [Current Resource Management \(National Environmental Standards for Air Quality\) Regulations 2004.](#)
- [Proposed amendments to the Resource Management \(National Environmental Standards for Air Quality\) Regulations 2004.](#)
- [Kaupapa summary of proposed amendments to the Resource Management \(National Environmental Standards for Air Quality\) Regulations 2004.](#)
- [Discussion document on the proposed amendments to the Resource Management \(National Environmental Standards for Air Quality\) Regulations 2004.](#)

Table 1 sets out the proposed amendments to the NESAQ as in the discussion document.

**Table 1: Summary of current and proposed provisions to the NESAQ**

Proposed amendments	Current NESAQ provisions	Proposed provisions
<b>Particulate matter</b>		
PM <sub>2.5</sub>	None	Daily average PM <sub>2.5</sub> standard – 25 µg/m <sup>3</sup> (three or fewer exceedances allowed in a 12-month period) Annual average PM <sub>2.5</sub> standard – 10 µg/m <sup>3</sup> Monitoring required in all airsheds Publicly notify breaches Replace PM <sub>10</sub> with PM <sub>2.5</sub> for ‘offset’ and open fires provisions
PM <sub>10</sub>	Daily average PM <sub>10</sub> standard – 50 µg/m <sup>3</sup> One exceedance of daily PM <sub>10</sub> allowed from 1 September 2020	PM <sub>10</sub> standard retained Monitoring requirements retained Publicly notify breaches
‘Offset’ discharges in polluted airsheds	‘Polluted’ if daily PM <sub>10</sub> standard breached, averaged where possible over previous five years Polluted until PM <sub>10</sub> standard not breached in previous five years New resource consent applications that will increase PM <sub>10</sub> by more than 2.5 µg/m <sup>3</sup> in a polluted airshed must be declined, unless discharges will be offset elsewhere in airshed	Reflect change from PM <sub>10</sub> to PM <sub>2.5</sub> standards ‘Polluted’ if either daily or annual PM <sub>2.5</sub> standards breached, where possible averaged over previous five years Meaningful data required to calculate average exceedances Polluted until neither PM <sub>2.5</sub> standard has been breached in previous five years PM <sub>10</sub> standard used where airshed does not yet have adequate meaningful PM <sub>2.5</sub> data Decline new consent applications to discharge PM <sub>2.5</sub> in a polluted airshed, unless offset within the same airshed

Proposed amendments	Current NESAQ provisions	Proposed provisions
<b>Solid-fuel burners</b>		
Emission standard for burners	No more than 1.5 g/kg	No more than 1.0 g/kg Specify updated and/or appropriate methods for measuring
Thermal efficiency standard for burners	No less than 65 per cent	No less than 65 per cent (no change) Specify updated and/or appropriate methods for calculating
Application of standard for burners	Applies to new wood burners	Applies to all new domestic solid fuel burners including open fires, wood, coal, pellet, and multi-fuel burners, cookers and water boilers
	Applies only to properties of less than 2 hectares	Applies only to properties of less than 2 hectares (no change)
Solid fuel burning, open fires prohibited	Prohibit discharges indefinitely from newly installed, solid fuel open fires when PM <sub>10</sub> standard is breached	Reflect change from PM <sub>10</sub> standard to PM <sub>2.5</sub> standards Applies indefinitely when either daily or annual PM <sub>2.5</sub> standard is breached
<b>Monitoring</b>		
Monitoring methods	Specified in Schedule 2 of the NESAQ Various Australian/New Zealand standards and US Code of Federal Regulations for monitoring PM <sub>10</sub>	Specify updated and appropriate methods for monitoring PM <sub>10</sub> and PM <sub>2.5</sub> in Schedule 2 of the NESAQ
<b>Mercury</b>		
Use of mercury in industrial processes	None	Prohibit use of mercury in certain industrial processes specified in Annex B of the Minamata Convention
Emissions that may contain mercury	None	Incorporate by reference international best practice guidelines for emissions sources specified in Annex D of the Minamata Convention

**Note:** This table only includes the provisions we expect to amend. g/kg = grams per kilogram; Resource Management (National Environmental Standards for Air Quality) Regulations 2004; PM<sub>2.5</sub> = fine airborne particles, smaller than 2.5 microns; PM<sub>10</sub> = particulate matter measuring 10 microns or less; µg/m<sup>3</sup> = microgram per cubic metres.



# How we consulted

We published a consultation document, along with summaries of the proposed NESAQ amendments.

See the Ministry for the Environment website:

- Improving the quality of our air: [main consultation page](#).
- [Consultation document and proposed amendments](#).

We notified the public about the consultation through a variety of means, including publishing on social media and on the front page of our website. We notified iwi, key stakeholders, and individuals who expressed an interest in the consultation, directly via email or post. The Ministry of Health directly notified all public health units.

The consultation allowed for any member of the public to make a submission, using the online web form, email address, or by post.

Public consultation was originally scheduled to run from February 2020 until April 2020 but was extended to July 2020 as a result of the national lockdown in response to the COVID-19 pandemic. During the consultation period, officials engaged with select iwi partners and key stakeholders. This included hui with iwi and hapū, workshops with regional council staff and meetings with industry representatives. See below for more details.

## Consultation document

The consultation document, *Improving the quality of our air*, provided a proposal for discussion, setting out the core components of the amendments in seven sections. We have analysed the submissions in this report according to this structure.

The document invited members of the public to respond to 23 questions. The online consultation tool and the kaupapa summary included an extra four questions for iwi and hapū.

## Engagement during public consultation, February–July 2020

We met with interested parties between February and July 2020. Due to the impacts of the COVID-19 response, such as travel restrictions, many meetings were held virtually and included the following.

### Hui with iwi and hapū

We notified all iwi groups of the proposals in writing. Although we invited all iwi groups to discuss the proposals, we requested to meet with iwi in areas of known poor air quality. Hui were held with iwi that specifically expressed an interest in air quality and the proposed amendments. Hui were both virtual and in person.

Officials attended hui with representatives of:

- Ngāi Te Rangī
- Whareroa Collective, including Ngāti Kuku hapū and Ngāi Tukairangi hapū
- Raukawa Charitable Trust
- Te Tau Ihu Iwi Forum – including Ngāti Apā ki te Rā Tō, Ngāti Kuaia, Rangitāne, Ngāti Koata, Ngāti Rārua, Ngāti Toa, Ngāti Tama and Te Atī Awa
- Northland iwi, including Ngāpuhi, Ngātiwai, Ngāti Whātua and Maniapoto.

Some hui followed on from earlier, targeted discussions with iwi (including Te Atī Awa) in 2018 to determine the scope of the amendments. Unfortunately, were unable to follow up our 2018 hui with Ngāi Tahu during the public consultation.

## **Industry meetings**

We held a virtual meeting with representatives of the New Zealand Home Heating Association to discuss the effects of the proposals on emissions and thermal efficiency standards for solid fuel burners. We were able to discuss potential impact on manufacturers, importers, retailers and installers of domestic solid fuel burners. We held other virtual industry meetings in response to requests to meet, including with Oceania Gold and Fulton Hogan.

## **National Air Quality Working Group and regional council workshops**

We led a series of virtual workshops to test the amendments with members of the National Air Quality Working Group (NAQWG), which includes air quality science and regulatory practitioners from all regional councils.

We also hosted a virtual meeting with members of the Regional Policy Special Interest Group (Policy SIG) to discuss policy and financial impacts for councils and their communities. This group comprises policy practitioners from regional councils.

These engagements with members of NAQWG and the Policy SIG during the public consultation period built on earlier, targeted engagement with regional council practitioners in 2018 to refine the scope of the proposals.

## **Further council engagement**

We had further online discussions with representatives from councils interested in the implications of the proposals to manage air quality in their region.

# How to read this document

This report provides an overview of themes in the submissions on the proposed amendments to the NESAQ consultation document.

The themes are set out under proposal headings. These correspond to subsections of the consultation document and address responses to the questions in each subsection.

## Analysing the submissions

We aggregated submission points on a common theme so we could assess the range of views. We then analysed and evaluated the merits of the points raised. Not all submissions, or submission points, are addressed individually in this report.

Submissions are grouped into themes largely based on the topic and associated question in the discussion document. Sometimes when we grouped submissions, a general view was expressed that did not represent one absolute view.

## What happens next?

This report also summarises the feedback from consultation on the proposed amendments to the NESAQ. The next steps are:

1. we will continue to refine the proposals, in light of the feedback and further evidence
2. we will prepare a recommendations report for the relevant Minister or Associate Minister for the Environment
3. once ministerial decisions are confirmed, we will work with the Minister to seek Cabinet approval to instruct the Parliamentary Counsel Office to draft the amendments
4. we will then work with the Minister to seek Cabinet approval of the amendments for notification in the *New Zealand Gazette*.

At the time of publishing this document, we intend the amendments to be gazetted before the Minamata Convention Conference of Parties in October 2021.

# Overview of submissions

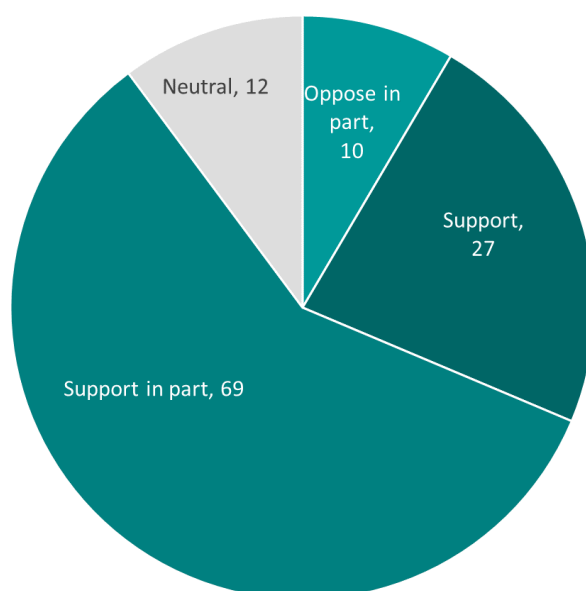
This section outlines all submissions and their themes, and summarises the data collected from submitters. This section does not contain any analysis of the feedback.

## Overall levels of support for the proposed amendments to the NESAQ

Substantially more overall support (either in full or in part) than opposition (either in full or in part) is evident for the proposed amendments. Figure 1 shows the overall support, using the total submissions tally of 118.

Table 2 sets out the distribution of responses by submitter category.

**Figure 1: All submitters: overall position**



**Note:** Submitters were able to select 'neutral', meaning 'impartial' as opposed to 'not specified'.

**Table 2: Levels of support by submitter category**

Submitter category	Oppose	Oppose in part	Support	Support in part	Neutral	Total
Business/industry	0	6	4	24	3	37
City/district council	0	1	2	5	2	10
Crown/public organisation	0	0	5	7	0	12
Individual	0	3	11	11	7	32
Iwi/Māori	0	0	0	4	0	4
Regional/unitary council	0	0	0	14	0	14
Science/research organisation	0	0	0	0	0	0
Other organisation	0	0	0	4	0	4
<b>Total</b>	<b>0</b>	<b>10</b>	<b>27</b>	<b>69</b>	<b>12</b>	<b>118</b>

# Key themes

This section sets out the general themes we noted, as well as feedback on specific issues.

## General themes from submissions supporting the proposals

The submissions represented interests from a range of sectors and perspectives. They had varying levels of support overall for the proposed amendments. Table 3 lists the feedback and outlines the general themes that emerged. The feedback relates to matters that submitters most commonly discussed.

**Table 3: Feedback on specific policy**

Policy	Key themes from the feedback
Introduce PM <sub>2.5</sub> as the primary regulatory tool to manage ambient particulate matter	<ul style="list-style-type: none"> <li>PM<sub>2.5</sub> standard is recognised as the better indicator of the effects on human health.</li> <li>There is strong scientific evidence of links between PM<sub>2.5</sub> and adverse health effects.</li> <li>Ambient PM<sub>10</sub> concentrations measured around New Zealand can be significantly influenced by non-anthropogenic sources.</li> <li>Introducing PM<sub>2.5</sub> would align New Zealand with overseas practices.</li> <li>Introducing PM<sub>2.5</sub> would align New Zealand with the World Health Organization (WHO) ambient air quality guidelines. Strong support for an annual PM<sub>2.5</sub> standard set in line with the WHO guidelines.</li> <li>General support for a daily PM<sub>2.5</sub> standard, with mixed feedback on the limit for the daily standard.</li> </ul>
Retain the PM <sub>10</sub> standard with reduced mitigation requirements for breaches	<ul style="list-style-type: none"> <li>General support for councils continuing to monitor PM<sub>10</sub> as well as PM<sub>2.5</sub>.</li> <li>Some submitters misinterpreted the consultation document as proposing to remove the PM<sub>10</sub> standard.</li> <li>PM<sub>10</sub> should continue to be monitored for information only.</li> <li>Costs would likely be minimal because councils already monitor PM<sub>10</sub>.</li> </ul>
PM <sub>2.5</sub> standards determine 'polluted' status and offsets provision	<ul style="list-style-type: none"> <li>Broad support for using PM<sub>2.5</sub> to determine 'polluted' status.</li> <li>General agreement that airsheds should be determined polluted if they exceed either the daily or the annual PM<sub>2.5</sub> standard. However, some suggest that only the annual PM<sub>2.5</sub> standard should determine 'polluted' status, while others note that only the daily PM<sub>2.5</sub> standard should determine 'polluted' status.</li> <li>General opposition to the offsets provision because it is difficult to apply and has unequal impact.</li> <li>Responses are nearly evenly split between identifying and not being able to identify more appropriate, measurable thresholds for controlling consented discharges in a PM<sub>2.5</sub> context.</li> <li>General agreement on using the PM<sub>10</sub> standard to determine an airshed's 'polluted' status if councils do not have adequate PM<sub>2.5</sub> data.</li> </ul>
Burner emissions standard of 1.0 g/kg, as tested to AS/NZS 4013:2014	<ul style="list-style-type: none"> <li>Majority support for an emission standard of 1.0 g/kg or lower.</li> <li>Some support for applying a burner emissions standard more stringent than the proposed new standard in certain areas, such as polluted areas, valleys and basins that can trap smoke, or residential areas.</li> <li>Some disagreement that the reduction in tested emissions would reduce real-life emissions or improve health.</li> </ul>

Policy	Key themes from the feedback
Apply burner emissions standards to all new domestic solid fuel burners (on properties 2 hectares or less)	<ul style="list-style-type: none"> <li>• General support for applying the emissions standard to all types of new domestic solid fuel burners.</li> <li>• Some disagreement that 2 hectares is an appropriate density measure.</li> <li>• Some disagreement on including cooker and water heaters in the design standards.</li> <li>• Further feedback suggesting the proposed standard should also apply to existing domestic burners not just those newly installed.</li> </ul>
Mercury emissions	<ul style="list-style-type: none"> <li>• General support for the proposals as written in the consultation document.</li> <li>• No use noted of any of the manufacturing processes that use mercury specified in Annex D of the Minamata Convention that are to be prohibited.</li> <li>• Some queried why the proposal did not include crematoria and geothermal power stations.</li> <li>• Clarification of when, how and by whom the Best Available Technologies and Best Environmental Practices (BAT/BEP) would be applied.</li> </ul>
Timing, implementation and transitional provisions	<ul style="list-style-type: none"> <li>• Majority agreement on requiring lead-in times for monitoring PM<sub>2.5</sub> and for burners that would no longer comply. Suggested lead-in times vary from 6 months to 5 years to start PM<sub>2.5</sub> monitoring, and from two months to 10 years to phase out non-compliant burners.</li> <li>• Considerations for lead-in times for monitoring and managing PM<sub>2.5</sub>: <ul style="list-style-type: none"> <li>– in the interest of public health, lead-ins should be as short as practicable</li> <li>– longer lead-ins may be necessary due to the cost, technology and new procedures to move to compliant burners.</li> </ul> </li> <li>• Longer lead-ins may be necessary to enable low-income households to transition to compliant heating without creating an extra financial or health burden.</li> <li>• For other suggestions about transition, see Response by policy area – <a href="#">Q22</a>.</li> </ul>

**Note:** g/kg = grams per kilogram; PM<sub>2.5</sub> = fine airborne particles, smaller than 2.5 microns; PM<sub>10</sub> = particulate matter measuring 10 microns or less.

# What we heard from iwi and Māori

## Hui on the proposed amendments

In February 2020, we wrote to iwi around the country, notifying them of the kaupapa and seeking their advice and guidance. We targeted those in areas of poor air quality.

Some iwi noted their lack of capacity to formally submit, due to under-resourcing and competing priorities. Because of this, we took these conversations into consideration and did not require a formal written submission.

Four submitters from the written submissions identified as either an iwi representative or Māori organisation. They largely support the amendments, noting that their support was either in full or in part. The general consensus is to use both the PM<sub>10</sub> and the PM<sub>2.5</sub> standards, and to decline rather than offset new resource consents for polluted airsheds.

Through hui and written submissions, iwi generally expressed support, noting that the proposals would enhance the mauri of the air and its capacity to support human and environmental well-being. Submissions noted that respiratory health issues disproportionately affect Māori, so better air quality is needed. Iwi in the Mount Maunganui airshed expressed concern about shifting the primary regulatory tool to PM<sub>2.5</sub>, noting the ongoing adverse health effects they are experiencing that are associated with industrial PM<sub>10</sub> emissions in the area.

# Responses by policy area

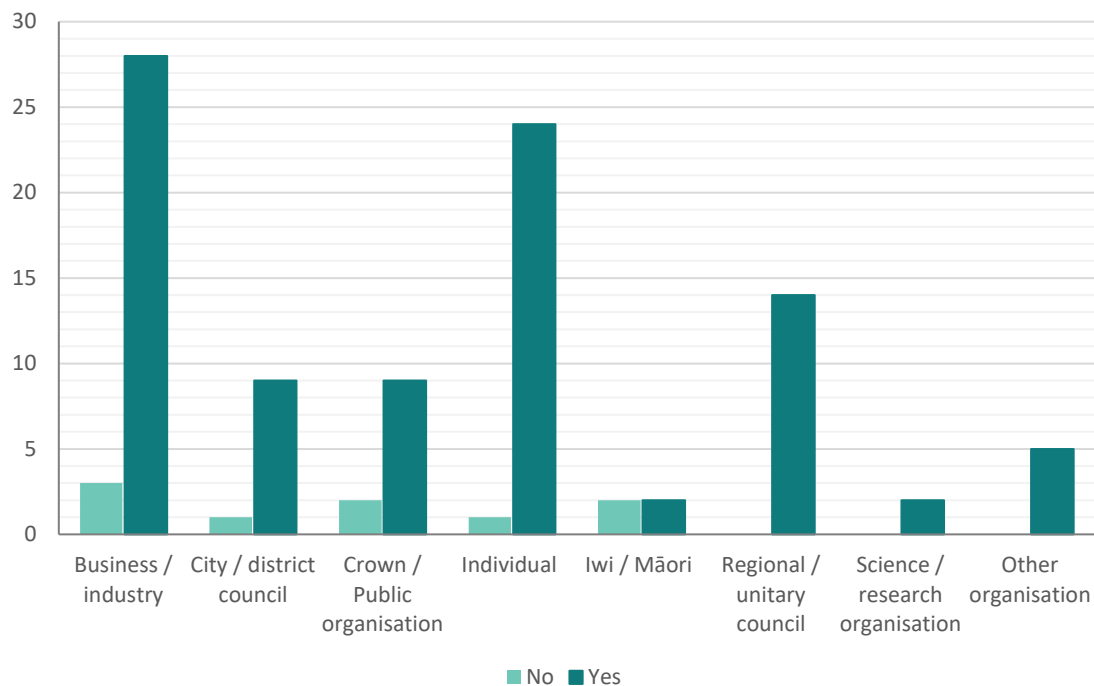
## Scope of the proposed amendments

This section summarises responses to questions 1 to 27 of the discussion document on the scope of the proposed NESAQ amendments. It also outlines the comments on the drafting structure and policies.

## Introduce PM<sub>2.5</sub> as the primary regulatory tool to manage particulate matter pollution

### Q1. Do you agree the proposed PM<sub>2.5</sub> standards should replace the PM<sub>10</sub> standard as the primary standard for managing particulate matter?

Figure 2: Question 1 Responses



Total responses: 102

Agree: 93

Do not agree: 9

### Summary of feedback

The submissions process revealed broad support for PM<sub>2.5</sub> as the primary regulatory tool to manage particulate matter pollution. Reasons for support included improvements to human health, aligning New Zealand with overseas practices or the World Health Organization (WHO) guidelines, and scientific evidence for the negative effects of PM<sub>2.5</sub>.

Those opposing suggested using both the PM<sub>10</sub> and PM<sub>2.5</sub> standards to trigger polluted status and mitigation requirements.



Some ambiguity and misunderstanding exists about this policy, which led to the misinterpretation that PM<sub>2.5</sub> monitoring would replace PM<sub>10</sub> monitoring. The policy, as written in the discussion document, proposes that while the primary regulatory tool would shift to PM<sub>2.5</sub>, PM<sub>10</sub> monitoring would continue, and councils would still have to notify breaches of the PM<sub>10</sub> standard.

*Reasons for support included*

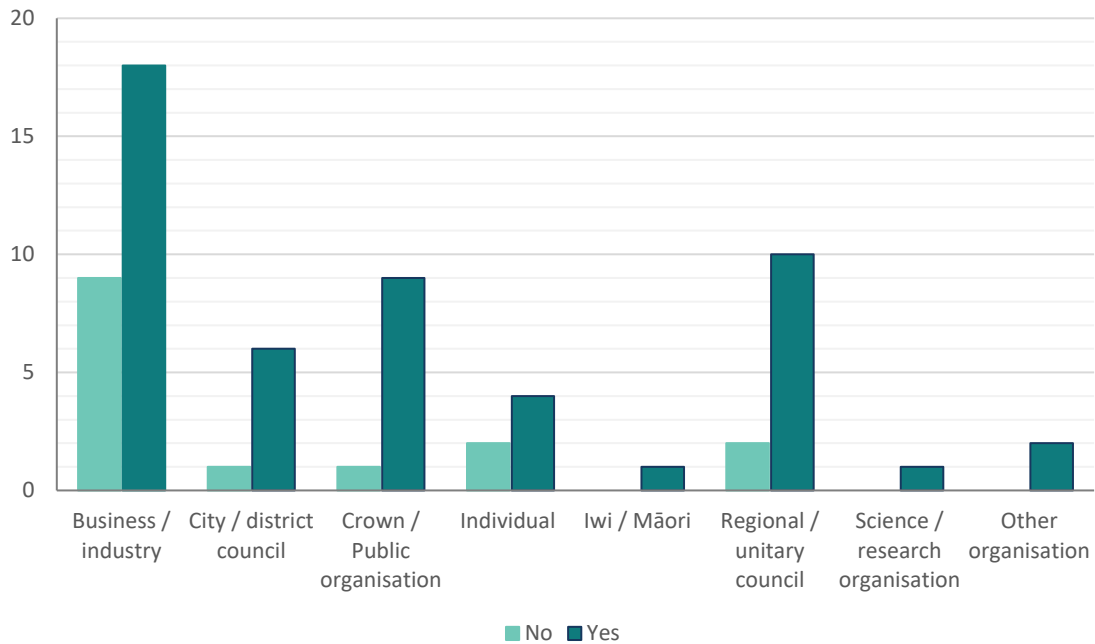
- Ambient PM<sub>2.5</sub> concentrations are recognised as a better indicator than PM<sub>10</sub> concentrations of the effects of particulate matter on human health.
- Strong scientific evidence exists of links between PM<sub>2.5</sub> and adverse health effects.
- Ambient PM<sub>10</sub> concentrations measured around New Zealand can be significantly influenced by non-anthropogenic sources.
- Shifting to PM<sub>2.5</sub> would align New Zealand with overseas practices.
- Shifting to PM<sub>2.5</sub> would align New Zealand with the WHO guidelines.
- Councils are largely supportive of the policy, noting that PM<sub>2.5</sub> would be a better measurement for human health outcomes.

*Reasons for opposition included*

- Some councils noted that the proposed PM<sub>2.5</sub> standard would be difficult to achieve.
- Some councils noted increased costs or long timeframes would be necessary for compliance.
- It was suggested the PM<sub>10</sub> standard should continue to trigger polluted status alongside the new PM<sub>2.5</sub> standard.
- A few public health units raised concerns about the effects on human health if the proposals shift away from PM<sub>10</sub>.

## Q2. Do you agree we should include both a daily and an annual standard for PM<sub>2.5</sub>?

Figure 3: Question 2 Responses



Total responses: 66

Agree: 51

Do not agree: 15

### Summary of feedback

As above, submitters generally support including both a daily and annual standard for PM<sub>2.5</sub>. Opponents suggested that an annual standard is sufficient.

#### *Reasons for support included*

- Both a daily and an annual standard would align New Zealand with the WHO guidelines.
- Both a daily and annual standard are best to manage adverse health effects caused by PM<sub>2.5</sub>.
- Including a daily standard helps to address seasonal exceedances and peaks.
- Public health units and district health boards noted that there is value in having both standards, from the health perspective.
- Councils largely support having both standards, noting health effects as the reason.

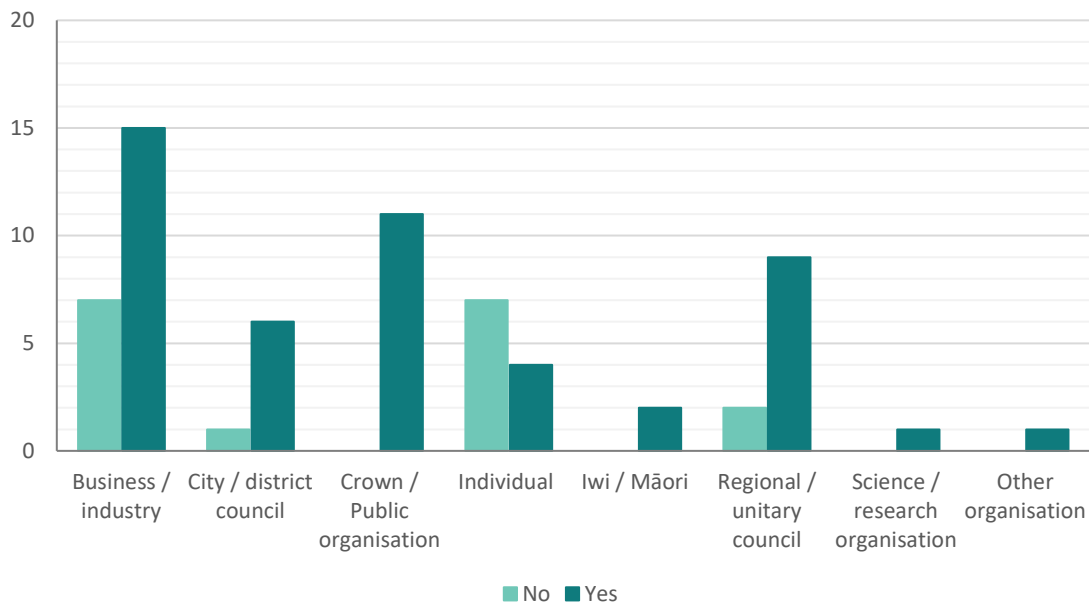
#### *Reasons for opposition included*

- Only an annual standard is needed, because health effects from annual concentrations are more severe than those from daily exposure.
- Several other countries only have an annual standard.
- A daily standard might not be the best measure of short-term effects, so a more acute standard, such as hourly, might be more representative.

Several submissions referred to the Parliamentary Commissioner for the Environment’s commentary on the 2014 Air Domain report. This mentions that the health effects are more severe from long-term than short-term exposure.

### Q3. Do you agree the standards should reflect the World Health Organization guidelines?

Figure 4: Question 3 Responses



Total responses: 66

Agree: 49

Do not agree: 17

#### Summary of feedback

Submitters expressed considerable support for aligning the standards with the WHO guidelines. However, some submitters mentioned the need to consider New Zealand’s local context and the current WHO guidelines review.

#### Reasons for support included

- The WHO guidelines are robust, well established and based on scientific evidence.
- The WHO guidelines provide both daily and annual standards that are needed to manage exposure to fine particulate matter.
- The WHO guidelines are already used in industry and as criteria in industrial air quality assessments.
- Public health units noted that the WHO guidelines represent the most well-established scientific evidence for the health effects of exposure to fine particulate matter.

#### Reasons for opposition included

- The WHO guidelines do not consider New Zealand’s local context.
- The WHO guidelines are not strict enough, because there is no safe level of exposure to particulate matter.

- More research is needed to consider if the WHO guidelines are appropriate for New Zealand’s context.
- The WHO daily PM<sub>2.5</sub> guideline is too strict, given many New Zealand airsheds cannot meet the current PM<sub>10</sub> standard.
- The current WHO guidelines are outdated.
- The WHO guidelines may change because they are currently under review.

*Other issues*

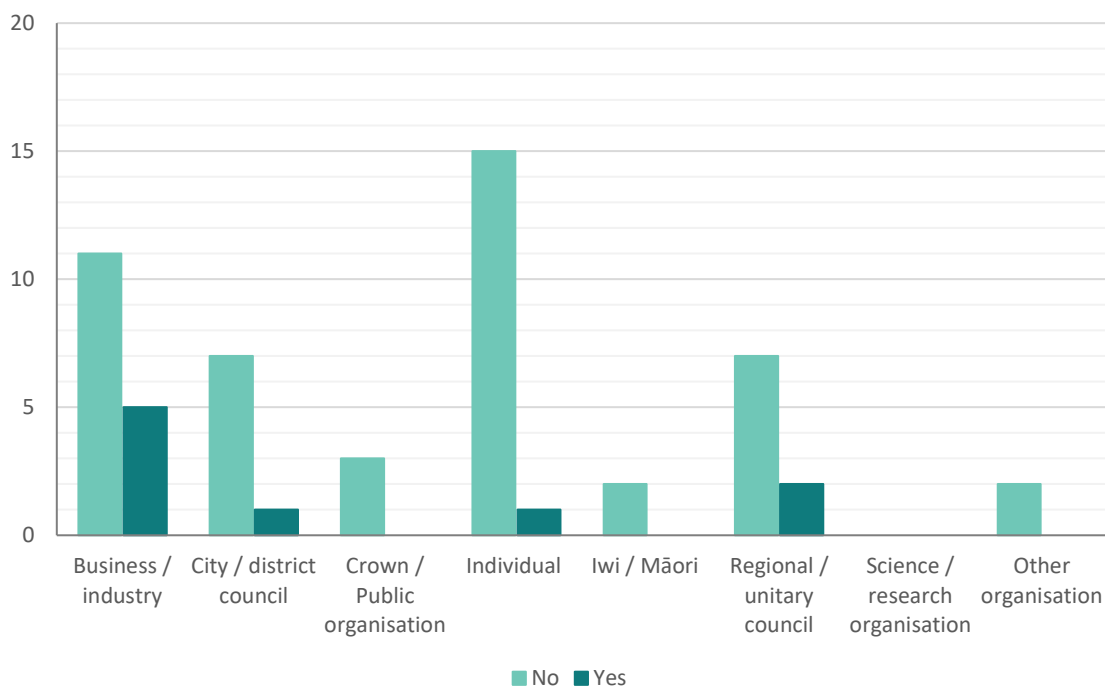
Councils largely supported the policy but noted poor timing of the amendments, given the review of the WHO guidelines.

Submitters strongly supported delaying the amendments until after the review of the WHO guidelines, so that the proposed standards align with the new WHO guidelines.

It was suggested that New Zealand should regularly update its standards to reflect the current WHO guidelines.

**Q4. Do you consider that your airshed would meet the proposed PM<sub>2.5</sub> standards? If not, what emissions sources do you expect to be most problematic?**

**Figure 5: Question 4 Responses**



Total responses: 56

Airshed would comply: 9

Airshed would not comply: 47

## Summary of feedback

Most submitters (47) reported their airshed would not meet the proposed PM<sub>2.5</sub> standard. However, this did not discourage them from supporting the proposal.

The most problematic emissions sources were considered to be wood burners, traffic, industry, and agricultural or rural outdoor burning. Most submitters considered wood burners to be the worst emitters in their airshed.

Urban dwellers said transport emissions were the second most problematic emissions source. Those in rural areas considered either agricultural or rural outdoor burning to be the second most problematic emissions source.

It was noted that open burning and the sale of wet wood should be banned, as it is in some other countries.

### *Reasons for meeting proposed standards included*

- Their airshed already meets the PM<sub>10</sub> standard.
- Their airshed has already been monitoring PM<sub>2.5</sub>, and the data indicate that their airshed would meet the proposed standard.
- Their airshed has been modelled to meet the proposed standard.

### *Reasons for not meeting the proposed standards included*

- Their airshed already monitors PM<sub>2.5</sub>, and the data indicate that their airshed would not meet the proposed standard.
- Their airshed already fails to meet the PM<sub>10</sub> standard.
- Their airshed has large PM<sub>10</sub> increases in winter, mainly from PM<sub>2.5</sub>, and therefore would not meet the proposed standard.

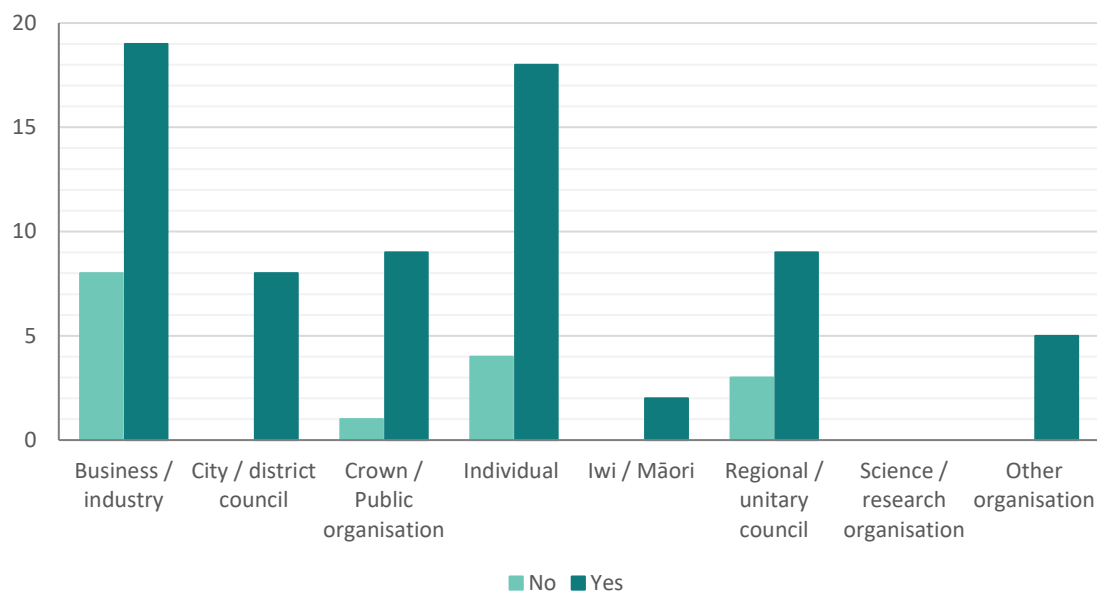
### *Other issues*

- Some councils are unsure whether they would meet the standard, due to inconsistencies and uncertainties in the PM<sub>2.5</sub> modelling.
- Some councils noted that their gains under the current NESAQ and their current air plans would help them meet the proposed standard.
- Some councils have done significant work to improve air quality under the current standard but do not expect to meet the proposed PM<sub>2.5</sub> standards. They are concerned about how their communities will respond to changes that will likely be required to meet the new standards.
- Some district health boards noted that achievability should not be a factor in introducing the standards.

## Retain the PM<sub>10</sub> standard with reduced mitigation requirements

### Q5. Do you agree councils should be required to keep monitoring PM<sub>10</sub>?

Figure 6: Question 5 Responses



Total responses: 86

Agree: 70

Do not agree: 16

#### Summary of feedback

The continuation of monitoring PM<sub>10</sub> as well as PM<sub>2.5</sub> was largely supported. As noted, some submitters appear to have misinterpreted the proposal to retain the PM<sub>10</sub> standard, due to the ambiguity of PM<sub>2.5</sub> replacing PM<sub>10</sub> as the primary regulatory tool to manage particulate matter. Some interpreted this as retaining PM<sub>10</sub> as a monitoring requirement only. Some submitters said they opposed the policy but that PM<sub>10</sub> monitoring should continue for recording purposes only.

#### *Reasons for support included*

- Exposure to coarse fraction<sup>1</sup> PM<sub>10</sub> particles can still negatively affect people's health.
- PM<sub>10</sub> remains as a WHO standard, and New Zealand should align with the WHO standards.
- Continuing to monitor PM<sub>10</sub> would help to show trends in New Zealand air pollution, because councils have a history of PM<sub>10</sub> data.
- Public health units noted that continuing to monitor PM<sub>10</sub> would be best to manage health effects from exposure to particulate matter.
- Councils are supportive because PM<sub>10</sub> also affects human health. Some noted that PM<sub>10</sub> should be monitored, at least through a transition period, to ensure meaningful data.

<sup>1</sup> Particles between 2.5 microns and 10 microns in size.

### *Reasons for opposition included*

- Exposure to PM<sub>2.5</sub> is linked to more negative health effects than PM<sub>10</sub>.
- PM<sub>10</sub> monitoring picks up exceedances from naturally occurring sources.
- There are costs to councils and taxpayers from continuing to monitor PM<sub>10</sub>.

### *Other issues*

- Continued monitoring of PM<sub>10</sub> could be determined on a site-by-site basis.
- PM<sub>10</sub> monitoring should continue, at least through the transition period or until enough PM<sub>2.5</sub> data are available, to ensure consistency.
- A few councils noted the need to monitor air pollutants other than particulate matter.
- Public health units pushed for adding the annual PM<sub>10</sub> standard as well as retaining the daily PM<sub>10</sub> standard, in line with the WHO guidelines.

## **Q6. What would be the additional costs involved in retaining PM<sub>10</sub> monitoring alongside PM<sub>2.5</sub> monitoring, versus the potential loss of valuable monitoring information?**

Total responses: 56

### **Summary of feedback**

Submitters noted that costs would likely be minimal because councils already monitor PM<sub>10</sub>.

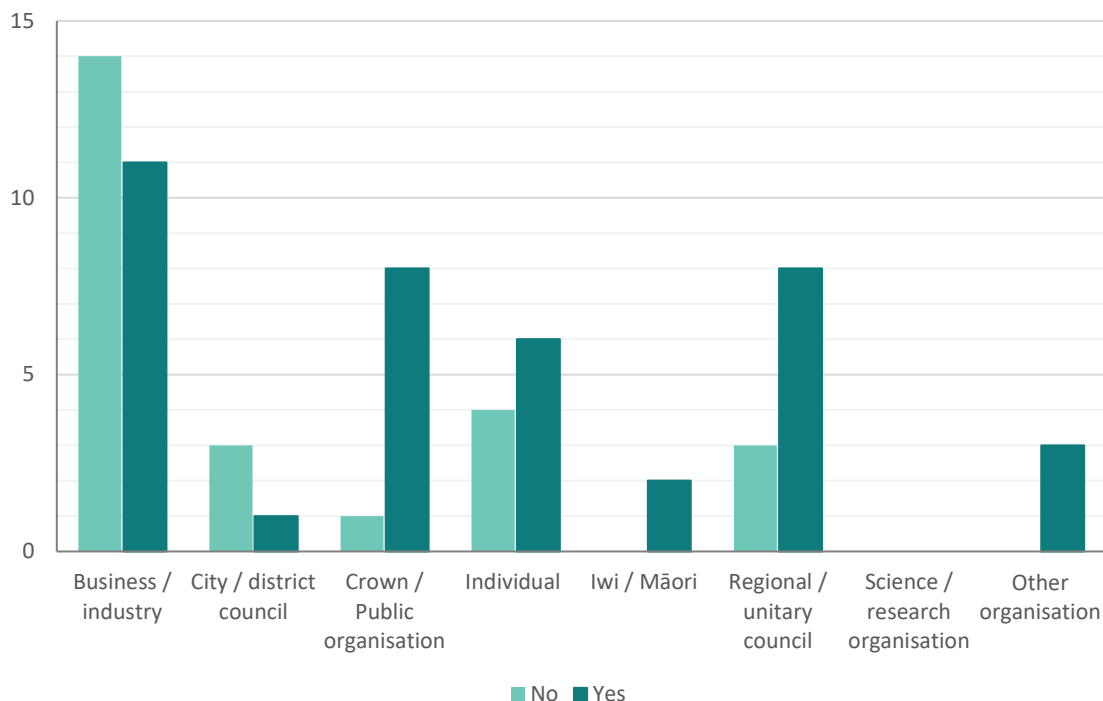
### *Main themes*

- The costs of implementing the proposals should not be taken into consideration because the effects on human health should be the main concern of the proposal.
- The costs should be negligible, because councils already monitor PM<sub>10</sub> and some already monitor PM<sub>2.5</sub>.
- A group of councils noted that installing new monitors would now cost less due to advances in monitoring instruments.
- There will be costs involved in installing new monitors and for ongoing monitoring and maintenance.
- Public health units commented that the extra monitoring costs were warranted, because monitoring will protect human health and bring health benefits that outweigh any added cost.

## Polluted airsheds and resource consents

### Q7. Do you agree an airshed should be deemed polluted if it exceeds either the annual or the daily PM<sub>2.5</sub> standard?

Figure 7: Question 7 Responses



Total responses: 64

Agree: 39

Do not agree: 25

### Summary of feedback

Public submissions largely supported using both the annual and daily PM<sub>2.5</sub> standards to determine polluted status.

Reasons for opposition included that polluted status should be based on only annual or only daily exceedances. Some noted a daily standard might not accurately reflect short, hourly exceedances. Others commented that different standards should apply to different locations, such as rural and urban.

#### *Reasons for support included*

- Both short-term and long-term exposure is harmful to human health.
- There is no safe level of exposure to particulate matter.
- The WHO guidelines include both a daily and annual standard for polluted status.

#### *Reasons for opposition included*

- The polluted status should be based on the annual standard only (suggested by several submitters, including some councils).
- The standards are too strict; airsheds with generally good air quality would be classified as polluted.



- The number of permitted daily exceedances should be higher.
- There should not be just one polluted status level. Instead, there should be a tier system or multiple levels of polluted status.
- PM<sub>10</sub> should remain, to address industrial emissions.

#### *Other issues*

- Activating the polluted status should trigger stricter measures on wood burner installation and use, open fires and other sources of particulate matter.
- One council suggested that airsheds should not be 'deemed polluted' and recommended mitigation measures to reduce PM<sub>2.5</sub>.
- Some submitters noted that the intent of the current policy was inconsistent in how it was actually carried out. Several suggested changes for the current Regulation 17.
- Concerns were raised about the lack of transitional provisions.

### **Q8. If all new resource consent applications to discharge PM<sub>2.5</sub> into a polluted airshed must be offset or declined, how would this affect your activities, or activities in your region?**

Total responses: 75

#### **Summary of feedback**

Submitters broadly opposed to the offset provision, noting the following points:

- Some industry submitters noted that consents should be based on PM<sub>10</sub>, because there was little PM<sub>2.5</sub> in their airshed.
- Some councils noted they would not be affected because they did not have any polluted airsheds.
- Several councils and businesses noted this provision was unfair to industry, if industry was not the dominant source of pollution.
- Submitters noted the ineffectiveness and inefficiency of this policy, including difficulty to apply and lack of opportunities to use in some places.
- Some district health boards noted this provision would not be strict enough to protect human health from discharges to air.

Some submitters suggested that all PM<sub>2.5</sub> discharges should be declined because any exposure affects human health.

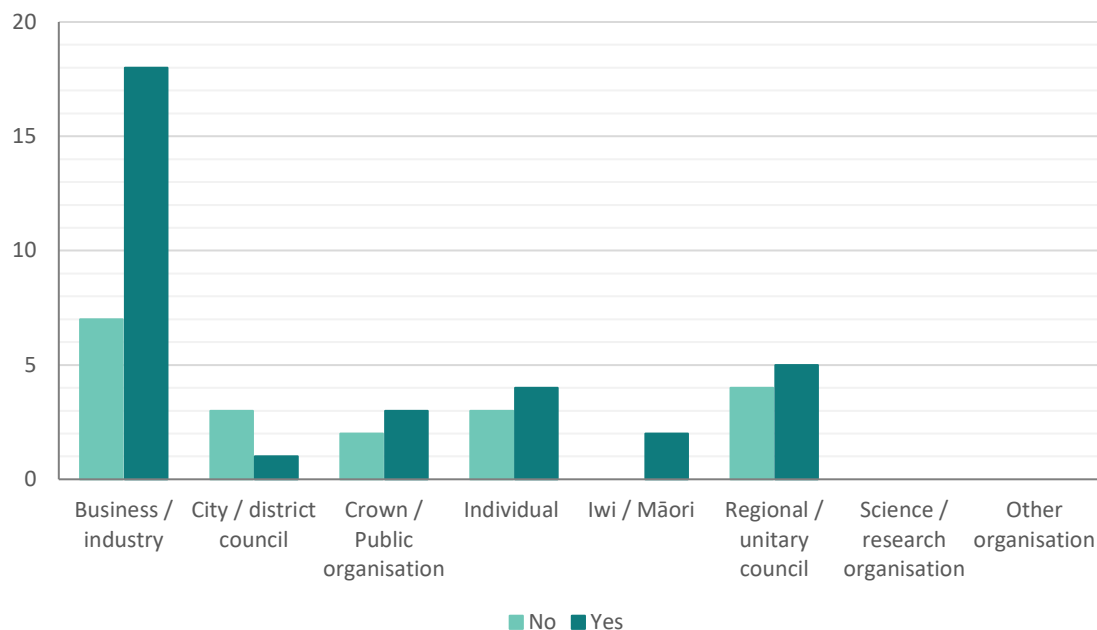
Many noted the need for clear guidance from the Ministry for the Environment on these provisions.

Several submitters noted this provision would likely have little effect on reducing particulate matter because it does not address existing sources or home heating, the greatest source of emissions in their airshed.

Some said that offsetting would just be 'moving the problem elsewhere', so new discharge consents should be declined to avoid this.

## Q9. Can you identify a more appropriate, measurable threshold for controlling consented discharges in a PM<sub>2.5</sub> context?

Figure 8: Question 9 Responses



Total responses: 52

Can identify a more appropriate threshold: 33

Cannot identify a more appropriate threshold: 19

### Summary of feedback

Submitters broadly agreed they could identify more appropriate, measurable thresholds for controlling consented discharges in a PM<sub>2.5</sub> context.

#### *More appropriate, measurable thresholds or measures identified included*

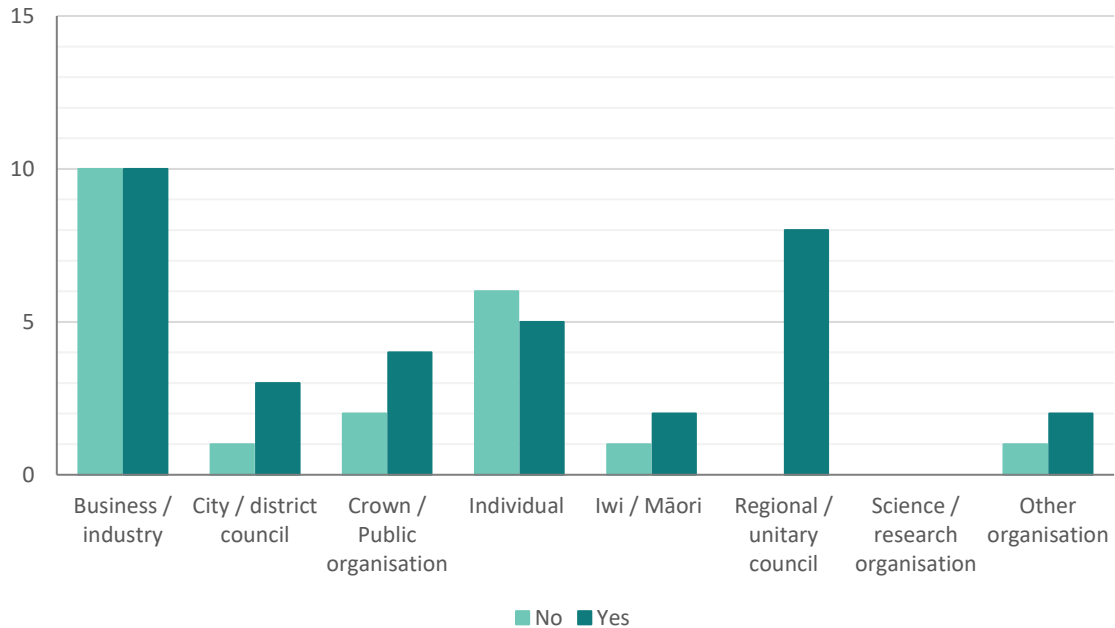
- A zero limit or a requirement to decline all new resource consent applications for PM<sub>2.5</sub> discharges into polluted airsheds.
- A significance threshold of 10 per cent of the daily standard (ie, 2.5 microgram per cubic metre).
- A 5 per cent significance threshold based on total existing discharges (eg, tonnes per year) as opposed to a concentration limit (microgram per cubic metre).

#### *Other suggestions*

- Consider mitigation measures instead of discharge thresholds.
- Replace offsets with more stringent rules.
- Introduce management plans which are independent from councils or resource consent applicants.
- Set up a council offset fund, to which consent holders would contribute payments and the council would then ensure mitigation was undertaken.
- Some submitters were unable to identify a more appropriate threshold. However, several suggested more data collection and research is needed to inform this threshold. A technical advisory group was suggested to do this.

## Q10. Do you agree that if councils do not have adequate PM<sub>2.5</sub> data, the airshed's classification under the PM<sub>10</sub> standards should apply?

Figure 9: Question 10 Responses



Total responses: 55

Agree: 34

Do not agree: 21

### Summary of feedback

Submissions largely support classifying airsheds as polluted under the PM<sub>10</sub> standards if councils do not have adequate PM<sub>2.5</sub> data.

#### *Reasons for support included*

- PM<sub>10</sub> should apply, because it is the next best available data.

#### *Reasons for opposition included*

- All councils should be required to monitor PM<sub>2.5</sub> after a transition period.
- Some airsheds that were polluted for PM<sub>10</sub> would no longer be polluted for PM<sub>2.5</sub>. This was particularly noted by industry submitters for some industrial areas.

#### *Other issues*

- Some submitters may have misinterpreted the question. Many noted that this should only apply for a transitional period.
- Some noted that this should only be carried over if the main source of pollution for the airshed was wood burners.
- Submitters noted that a compliance strategy would help with this provision.

## Emissions standard

### Q11. Do you agree with the proposal to reduce the emissions standard to no more than 1.0 g/kg? If not, what do you think the standard should be?

Figure 10: Question 11 Responses



Total responses: 48

Agree: 35

Do not agree: 13

### Summary of feedback

Submissions largely support an emission standard of 1.0 gram per kilogram (g/kg) or lower for newly installed domestic burners. This included feedback from business and industry, public health, local and regional councils.

Some opposed the policy on the basis that stricter standards would place a financial burden on low-income households without evidence of corresponding health benefits, and that the proposed standards would make no difference where emissions standards are already stricter than 1.0 g/kg. This view was held by a group of individuals, business and industry submitters and a collection of councils from regions with high numbers of exceedances in winter.

#### *Reasons for support included*

- It is reasonable to reduce the emissions standard to no more than 1.0 g/kg and could be achieved easily, because many burners on the market already meet the proposed standard.
- Manufacturers have already invested significantly in research and development for low-emission appliances.

- Slightly higher costs to home owners of installing lower emission burners are outweighed by health benefits to the community.
- Setting the limit lower than 1.0 g/kg could encourage consumers to install burners that are not the right size for their household.

#### *Reasons for opposition included*

- There should be better scientific evidence to determine the benefits of changing the standard from 1.5 g/kg to 1.0 g/kg.
- There should be testing to show that low-emission burners actually have lower emissions in 'real life'.
- The proposal would have no effect in areas where emissions standards are stricter than 1.0 g/kg.
- The current emissions standard of 1.5 g/kg is sufficient; it has effectively reduced pollution levels in all airsheds. Several business and industry submitters and local councils held this view.

#### *Other issues*

Several public health submitters and some regional councils and individuals said the standard should be lower than 1.0 g/kg because:

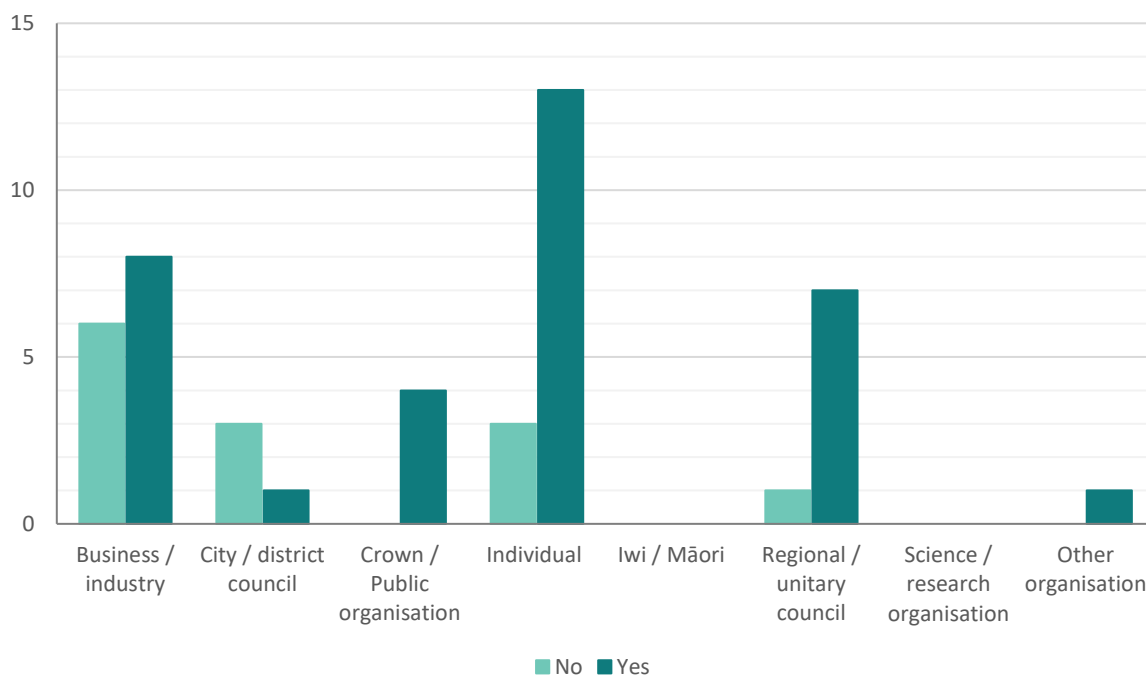
- many burners already on the market could meet an even stricter standard
- some councils have successfully set stricter standards in their own areas, such as 0.6 g/kg or 0.7 g/kg
- 'real-life' emissions for a burner that meets a 1.0 g/kg standard are much higher than 1.0 g/kg
- the standard should be as low as technically feasible
- stricter standards would encourage continuous design of better, lower emission burners.

Several regional councils and some individuals said the 1.0 g/kg standard for newly installed burners should apply to both new and existing burners because:

- applying the stricter standard only to newly installed burners would take a long time to improve air quality
- some areas have a high proportion of properties with older burners that do not meet current 1.5 g/kg standard
- households could keep using their existing high-emissions coal and multi-fuel burners indefinitely
- removing older, higher emissions burners (particularly from polluted airsheds) would improve air quality in areas where it is poor.

## Q12. Are there areas where a lower (more stringent) standard could be applied?

Figure 11: Question 12 Responses



Total responses: 47

Agree: 34

Do not agree: 13

### Summary of feedback

Most submitters supported applying an emissions standard more stringent than 1.0 g/kg in certain areas. Some said it should apply in areas, such as polluted airsheds, city centres or valleys, which can trap smoke in winter, while others said stricter standards should apply in all residential areas. Some submitters opposed more stringent standards for specified areas because it would be unfair to some households and confusing to domestic heating suppliers.

Supporters said that an emissions standard more stringent than 1.0 g/kg could be applied in:

- high exceedance areas
- polluted airsheds, as mitigation
- areas where people are more likely to be exposed to emissions:
  - urban areas
  - residential areas
  - populated valleys and basins that can trap smoke
- urban areas where there is not enough space for emissions to disperse (eg not small settlements)
- defined areas within council boundaries, at each regional councils' discretion, as they can currently do.

### *Reasons for opposition included*

- More stringent measures only in certain areas may exacerbate housing affordability and energy poverty issues.
- Applying the regulations should be consistent to avoid complexity, confusion and costs to burner suppliers.
- Little benefit would be gained from setting even lower emissions standards in some areas, unless it is a standard to ban solid fuel burning.
- Regional councils are best placed to decide where to apply stricter measures.
- Stricter standards without justification may prevent access to heating for low socio-economic communities that rely on wood or coal burning.

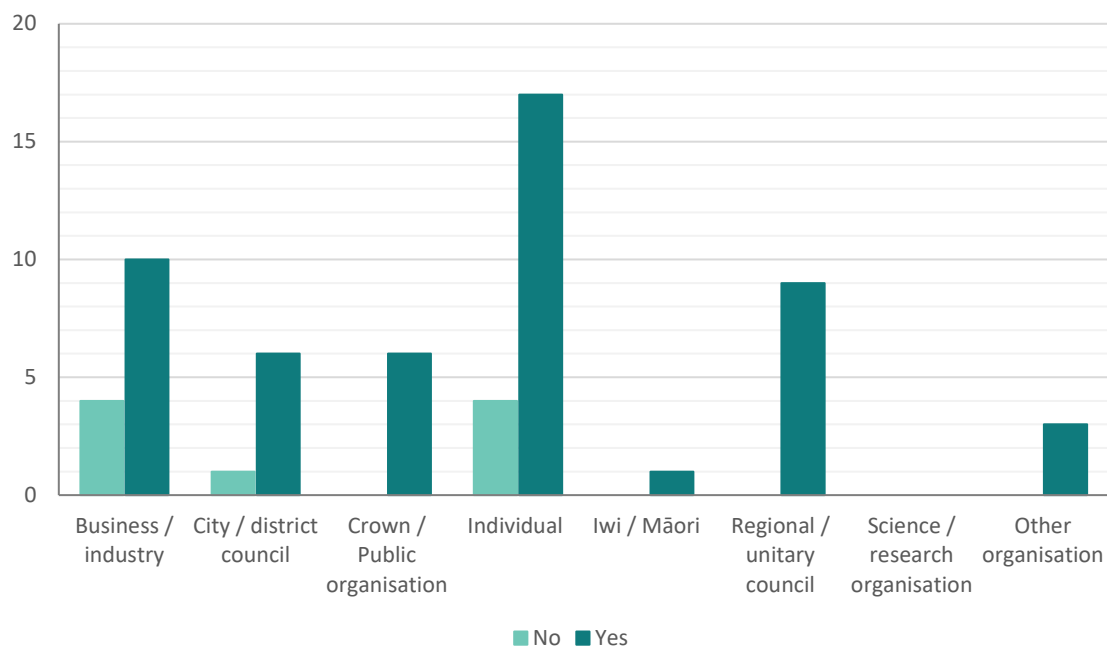
### *Other issues*

- Actual burner emissions levels are highly dependent on operator behaviour, fuel type and fuel quality.
- Most submitters requested the proposal be extended to regulate fuel quality (eg, firewood moisture content).
- Real-life emissions are much higher than those tested in a laboratory.
- The thermal efficiency standard is a barrier to burner design for lower emissions.
- Emissions reduction devices can be used on high emissions burners to meet the emission standard.
- There should be exceptions for households in remote and cold areas that depend on burning wood and coal for cooking and heating, due to unreliable electricity supply.

## Apply emissions standards to all domestic solid fuel burners

**Q13. Do you agree the new emissions standard should apply to all new domestic, solid fuel burners newly installed on properties less than 2 hectares in size?**

Figure 12: Question 13 Responses



Total responses: 61

Agree: 52

Do not agree: 9

### Summary of feedback

Question 13 has three parts. Submitters generally supported applying an emissions standard to all types of newly installed domestic solid fuel burners. However, there was substantial disagreement that 2 hectares is a suitable property size limit. Some suggested the standard should apply to all existing domestic burners not just those newly installed.

### Applying an emissions standard to all types of newly installed domestic solid fuel burners

#### *Reasons for support included*

- Including all types of burners is a more equitable way to target all domestic particulate matter emissions.
- Some councils already restrict the installation of all types of solid fuel burners in some areas, to focus on the effects of the emissions, not the fuel or purpose of the burner (eg, cooking, space heating, water heating).
- Current exclusion of anything that is not a 'wood burner used for space heating' has made the NESAQ less effective, and there is confusion about what the NESAQ captures and excludes.



- ‘Other’ burner types are often the cause of complaints by neighbours.
- It would prohibit high emitting burners (coal burners and multi-fuel burners) and be an effective way to regulate emissions more stringently.
- It would allow a shift to alternative low emissions solid fuel burners, such as pellet burners.
- It would prevent loopholes being exploited. This view was shared by the public health sector, local and regional councils, individual submitters and business and industry.

#### *Reasons for opposition included*

- Operator behaviour and fuel quality is the issue, not the appliance type.
- Solid fuel burners (other than wood burners) help people to live off the grid and become self-sufficient. Only a small number of these appliances are used compared with wood burners, and use is declining. Some from the burner industry and regional councils held this view.

#### *Other issues*

Some industries and regional councils said certain types of solid fuel burners (including woodburning cookers, water heaters and all outdoor appliances) should be exempt because:

- there is no established or approved equivalent test for cookers, water boilers and outdoor appliances
- cookers, water boilers and outdoor appliances are used intermittently or for shorter time periods
- the standards for burner emissions and thermal efficiency impose design constraints that cannot be applied to cookers
- cookers require a lot more control over the temperature to work effectively.

One regional council and one individual recommended including outdoor solid fuel burners for heating and cooking (eg, firepits and pizza ovens) because they contribute to the particulate matter load in the airshed.

### **Applying an emissions standard to newly installed domestic solid fuel burners on properties smaller than 2 hectares, to manage the density of discharges**

#### *Reasons for support included*

- Two hectares is an appropriate distance for pollutants to disperse from a domestic chimney.
- Properties over 2 hectares are generally in rural areas and should continue to be allowed to install and operate any type of heating or cooking appliance, because they cannot rely on a stable supply of electricity or gas.

#### *Reasons for opposition included*

- The concept of ‘over 2 hectares’ allows a lot of people to carry out a wide range of aerial pollution. Families, farmers, schools, industries and so on add a vast amount of particulate matter to the air.

- Smoke and air pollution can travel through the air a long way, so the size of properties is irrelevant.
- Some remote, rural properties are less than 2 hectares, and are surrounded by properties over 2 hectares.
- Two hectares is too arbitrary and too small.

### *Other issues*

Several submitters said the emissions standard could apply to newly installed solid fuel burners in:

- ‘urban areas’ (as defined in the National Planning Standards), with ‘rural areas’ to be exempt and property size to be disregarded
- properties at the urban periphery, such as lifestyle blocks
- polluted airsheds, regardless of property size
- all properties regardless of size and location; this would:
  - ensure that all new burners are clean and efficient regardless of location
  - be simpler to apply than a blanket rule that seeks to create a split between urban and rural areas.

Note: The consultation document did not include any proposal or questions about changing the current standards to apply to *existing* domestic burners. Therefore, many submitters did not make specific comment on this.

## **Applying the standard to all newly installed burners, not existing burners**

### *Reasons for support included*

- Requiring the removal of existing appliances would have significant health and financial impacts for low socio-economic households that rely on coal for heating.

### *Reasons for opposition included*

- Only applying the emissions standard to newly installed burners would take a long time to improve air quality.
- Some existing burners are likely to be equipped to burn coal, which is a significant source of particulate matter.
- We need to encourage a move towards clean energy sources to heat our homes and offices.
- Without requiring removal of ‘non-compliant’ burners, households could continue to use their existing higher emission burners (such as coal burners) indefinitely.
- Removing older, higher emissions burners (particularly from polluted airsheds) would improve air quality faster in areas where it is poor.
- Some councils already require the removal all types of ‘non-compliant’ solid fuel burners in some areas.

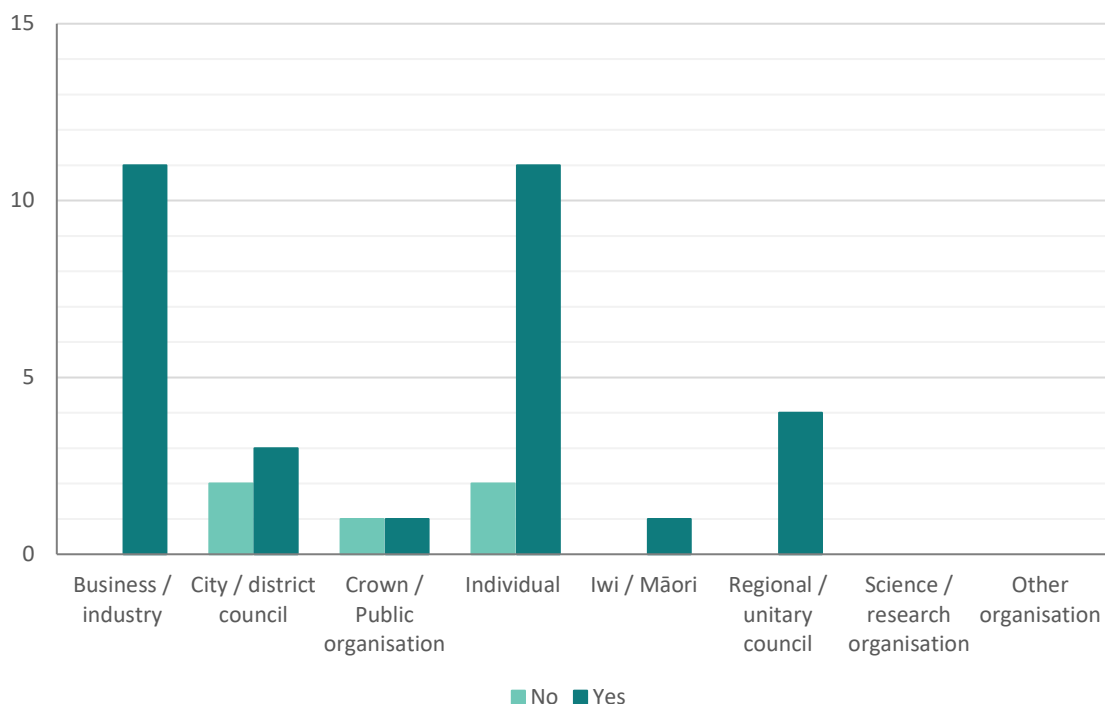
- Submitters considered it unfair and inequitable to regulate non-combustion emissions from industry without restricting emissions from existing domestic solid-fuel burners, because domestic burners contribute four times more than the emissions of industry.
- The burden to ‘clean up the airshed’ should be proportional to the contribution of contaminants, falling to residents rather than industry.

*Other issues*

- One regional council suggested a ban on installing and using all existing and new domestic indoor open fireplaces, subject to an appropriate lead-in time (eg, 24 months).
- Burner emissions levels depend on operator behaviour, fuel type and fuel quality.
- A number of submitters referred to European emissions reduction targets and standards.
- There is a lack of appropriate emissions tests for appliances other than woodburners.
- Concerns about restrictions on the use of affordable and accessible fuels such as wood and coal for domestic heating.

**Q14. Do the current methods to measure emissions and thermal efficiency need updating or changing? For example, to address any trade-off between thermal efficiency and emissions, or to test other types of burners or burner modifications that seek to reduce emissions?**

Figure 13: Question 14 Responses



Total responses: 36

Methods need updating or changing: 31

Methods do not need updating or changing: 5

## Summary of feedback

Because question 14 was highly technical, most submitters did not respond. Those who did, broadly supported changes to the policy on methods for measuring emissions (AS/NZS 4013:2014 or functionally equivalent method) and thermal efficiency (AS/NZS 4012:2014 or functionally equivalent method). They also supported changes to the thermal efficiency standard.

## Updating or changing the current methods to measure emissions and thermal efficiency

### *Reasons for support included*

- AS/NZS 4012:2014 and 4013:2014 test methods do not cover the emissions from starting up the appliance to operating it. Most particulate matter is emitted during the start-up phase.
- Results of laboratory testing with controlled fuels do not reflect the actual emissions and thermal efficiency of real-world installations.
- Reliance on laboratory testing allows manufacturers to tune the appliance to suit the test, not the actual operating conditions.
- The current testing methods only apply to wood burners.
- The thermal efficiency requirement is not relevant to burners that are not used for space heating (ie, cookers and water heaters).
- Updating the testing methods would be an opportunity to design methods that also consider climate change and clean energy.
- Actual burner emissions levels depend on operator behaviour, fuel type and fuel quality
- Aligning the New Zealand standards with European or other international standards would reduce compliance costs for burner importers by allowing for testing to be done overseas, provided it is to the appropriate standard.
- The current AS/NZS 4013:2014 test method may encourage the supply of large home heating appliances, which can be physically tested to that method. A large appliance in a small room would require more fuel and generate more emissions than one of suitable size. It would also produce excess heat energy.
- Nanoparticle emissions should be tested along a particle mobility distribution, and smaller particles should be given higher weight than larger ones.

Several submitters recommended using the 'Canterbury Method' (CM1) as the primary test for whether a domestic solid fuel burner meets the emissions and thermal efficiency standards, for the following reasons:

- CM1 is not currently a legal test but is widely accepted in Canterbury
- CM1 is focused on low emissions for ultra-low emission burners (ULEBs), yet ULEBs are also required to pass AS/NZS 4012:2014 and AS/NZS 4013:2014. It is costly to do multiple tests with contradictory methodology.
- Reducing compliance costs to manufacturers would enable investment in cleaner burning appliances.

### *Reasons for opposition included*

- Varying the standards can create uncertainty for appliance owners. If ongoing compliance is too difficult, people tend to disengage, making it harder to improve health and environmental outcomes.
- Many ULEBs, which are already available, meet the standards. Uptake of ULEBs tested to current standards has improved environmental, health and economic outcomes.

### *Other issues*

- Regulations need to recognise the affordability and benefits of wood and coal burning.
- The burden of reducing particulate matter emissions should be fair, with a higher burden on users of older, higher emission burners.
- Concern was expressed that the responsibility for funding and implementing the burner authorisation process lies with regional councils.
- Regulatory settings can encourage and enable industry innovation.
- Lower emission burners are perceived to be more expensive to buy.
- Holistic air quality and health measures would consider thermal efficiency of houses, climate emissions and clean heating together.
- Real-life testing of appliances could supplement or verify standard methods.

## **Changing the thermal efficiency standard to enable a trade-off to achieve lower emissions**

### *Reasons for support included*

- Due to the inconsistency of wood fuel and complex parameters of wood combustion, meeting both the proposed 1.0 g/kg emission standard and the 65 per cent thermal efficiency standard becomes a challenge for wood burner designers.
- A lower thermal efficiency standard would support the ongoing use of insert burners. These are in the cavity of indoor open fires that are common in older homes in high deprivation areas.
- Relaxing the thermal efficiency standard would enable emissions reductions, especially for insert burners.
- Currently only two insert burners on the market are ULEBs. They have continuous electric fans (to meet the thermal efficiency standard). Owners installing wood burners do so to avoid dependence on electricity, and opt for fan-free low emissions burners.

### *Reasons for opposition included*

- If the testing standard thresholds are to be 1.0 g/kg then the efficiency should remain at 65 per cent, to ensure the best possible heating performance.

### *Other issues*

- Minimum thermal efficiency should be reduced from 65 per cent.
- Different submitters suggested minimums ranging from 55 per cent to 60 per cent.

Several submitters recommended using a ratio of milligrams of particulates per mega joule (mg/MJ)<sup>2</sup> of heat produced to enable trade-offs in thermal efficiency and lower emissions. Most burner industry and some regional council submitters supported the use of mg/MJ as a unit to measure particulate emissions from domestic solid fuel burners, for the following reasons:

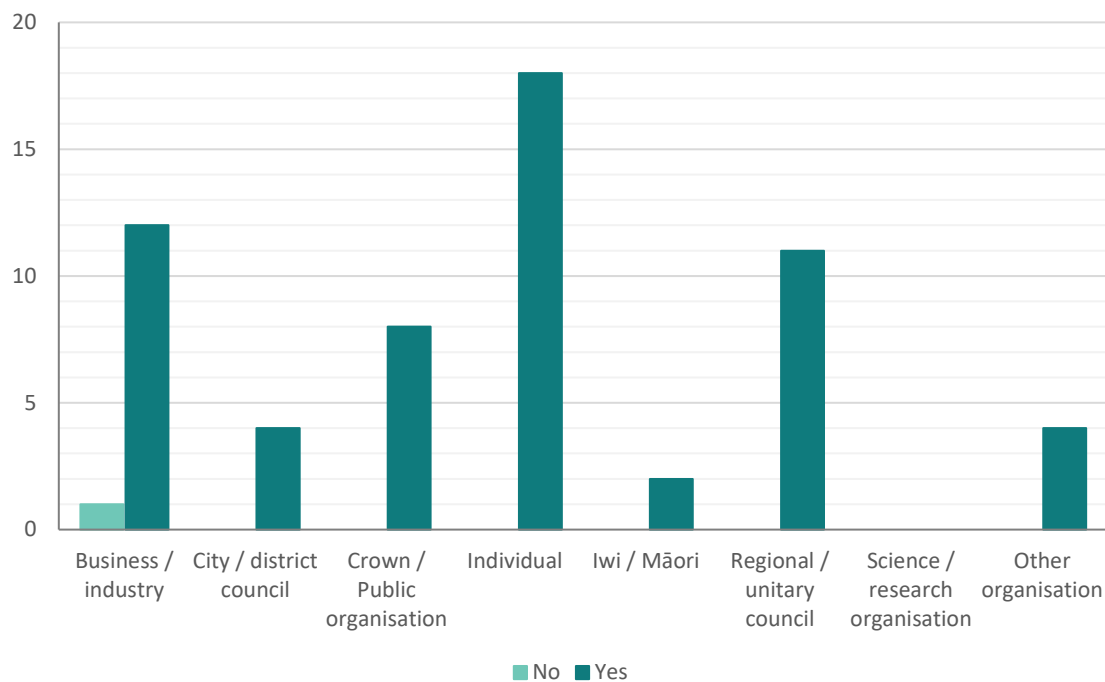
- instead of meeting both emissions and thermal efficiency standards, the standard could be met in various combinations of emission and efficiency
- Environment Canterbury has already adopted the mg/MJ unit for its ULEB threshold criterion.

However, some criticism was expressed that the mg/MJ ratio promotes fast-burning fires.

## Mercury emissions

### Q15. Do you support the proposed amendments to the NESAQ to support ratification of the Minamata Convention on Mercury?

Figure 14: Question 15 Responses



Total responses: 60

Support: 59

Oppose: 1

<sup>2</sup> The mg/MJ measure takes account of the quantity of emissions, based on usable heat generated by a wood burner. Emissions in mg/MJ can be calculated from measurements of thermal efficiency, particulate emissions per kilogram of fuel burnt, and 20.1 MJ/kg as a standard figure for the dry Gross Calorific Value of firewood (ie, energy embodied in 1 kg of firewood).

### Reasons for support included

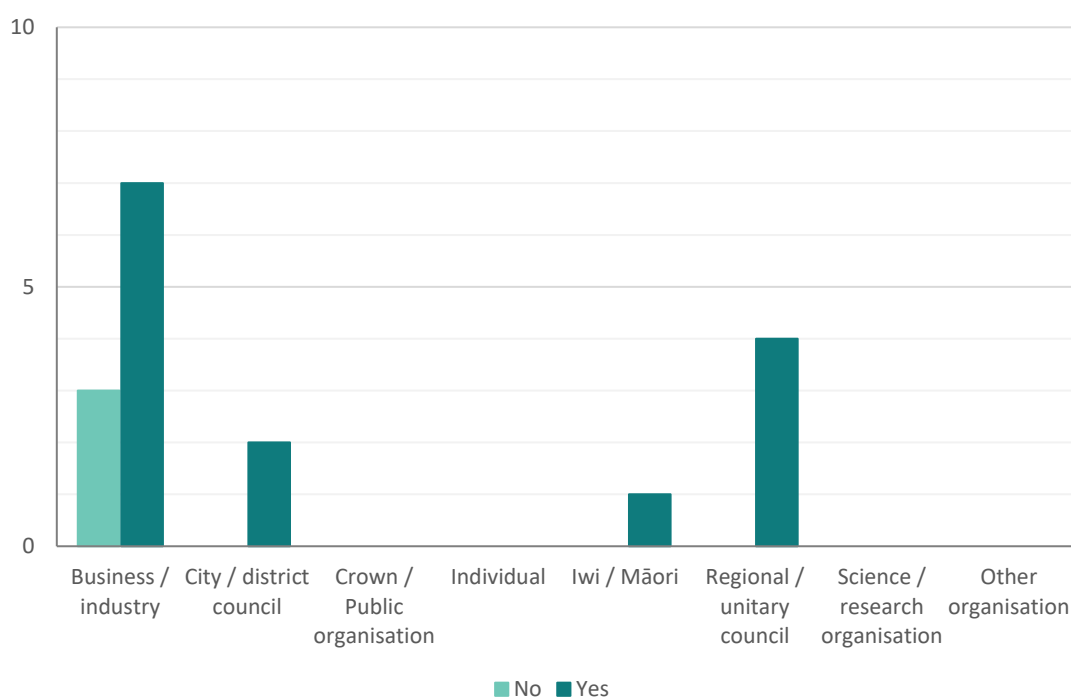
- Ratification for the Minamata Convention is long overdue.
- The proposal is expected to improve the health and well-being of people and the environment.

### Reasons for opposition included

- Concern about BAT/BEP and the proposal's lack of differentiation between new and existing sources of mercury emissions. The submitter is concerned that all existing sources of mercury emissions will have to undergo a consent renewal process that will require the use of BAT/BEP.

## Q16. Do you agree with how these amendments will affect industry?

Figure 15: Question 16 Responses



Total responses: 17

Agree: 14

Disagree: 3

### Summary of feedback

All but three submitters agreed with how these amendments would affect industry.

### Reasons for support included

- The proposal will mainly affect new large coal-fired boilers.
- It will bring New Zealand into line with international best practice.
- Some industry stakeholders are already required to demonstrate best practice when seeking a resource consent.

### *Reasons for opposition included*

- The need for adequate guidance.
- Uncertainty as to what the terms ‘best available technologies/best environmental practice’ mean.
- Concern that assumptions have been made based on the current requirements of the RMA rather than the Minamata Convention.
- Concern that this would affect old consents when they come up for renewal.

### **Q17. What guidance do you think will be needed to support implementation of the proposed amendments? Will industry need help to interpret the best practice guidance for the New Zealand context?**

Total responses: 3

#### **Summary of feedback**

Twenty submissions noted that guidance would be needed to support the implementation of the proposed amendments.

Nine suggested that industry would need guidance to do this. One stated that industry would need help to interpret the BAT/BEP guidance under the Minamata Convention for the New Zealand context.

Guidance was also requested by eight submitters for councils, particularly on how to incorporate the requirements of the Minamata Convention into their consents for new or substantially modified plant.

### **Q18. Do you use any of the manufacturing processes listed in Proposal 9? If so, does this process use mercury?**

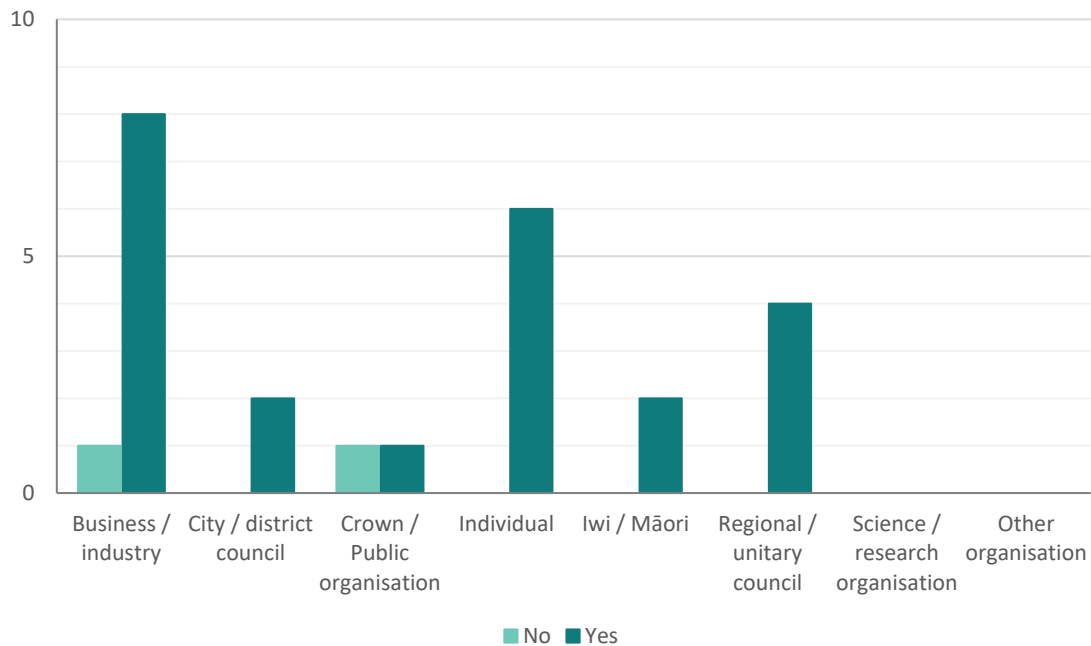
Total responses: 26

No submitters noted the use of any manufacturing processes listed in Proposal 9. 25 specifically stated that they did not use any of these processes. One was unsure, because it was not within their area of expertise. No other submitters commented.



## Q19. Do you agree with the Government’s proposed approach to regulate the source categories in Proposal 10? If not, why not?

Figure 16: Question 19 Responses



Total responses: 26

Agree: 24

Do not agree: 2

View Proposal 10 in [Consultation document and proposed amendments](#).

### Summary of feedback

#### *Reasons for opposition included:*

Of the two that did not agree, the reasons were:

- geothermal power stations and crematoria are not included in the list of industries required to incorporate best practice and guidance when seeking consent to discharge mercury into the air. They submit that these should be included in the list, and therefore disagree with the proposed approach
- a belief that the changes to the NESAQ appear to be more for the purpose of ratifying New Zealand’s Convention obligations and protecting the country’s international reputation. The submitter believed that this will not manage the future risk from mercury emissions, and therefore disagrees with the proposed approach.

## Q20. What air pollution control technologies are currently required for existing source categories listed in Proposal 10?

Total responses: 17

View Proposal 10 in [Consultation document and proposed amendments](#).

### Summary of feedback

Twelve submitters commented on air pollution technologies currently required for the use categories listed in Proposal 10. Although smaller emitters often do not require specific control measures, technologies noted included:

- baghouses
- wet/water scrubbers
- multicyclones
- process modification (such as indirect use of geothermal fluid), adsorption and absorption processes for flue gas capture
- electrostatic precipitators.

## Timing, implementation and transitional provisions

### Q21. Do you agree that lead-in times are required for starting to monitor PM<sub>2.5</sub> and for burners that will no longer be compliant? What lead-in times do you suggest and why?

Figure 17: Question 21 Responses



Total responses: 79

Agree: 67

Do not agree: 12

## Summary of feedback

Most submitters (67) agreed that lead-in times are required for starting to monitor PM<sub>2.5</sub> and for burners that would no longer be compliant. However, submitters suggested a large variation of lead-in times.

The suggested lead-in times ranged from six months to five years. The reasons included:

- councils need to resource the monitoring requirement. Regional councils may require a longer lead-in, based on budget availability, to transition to combined PM<sub>10</sub> and PM<sub>2.5</sub> capability
- councils need time to change regional plans
- councils need time to collect accurate baseline data
- shorter lead-in times enable quicker action.

The suggested lead-in times to phase out non-compliant burners ranged from two months to 10 years. The reasons were:

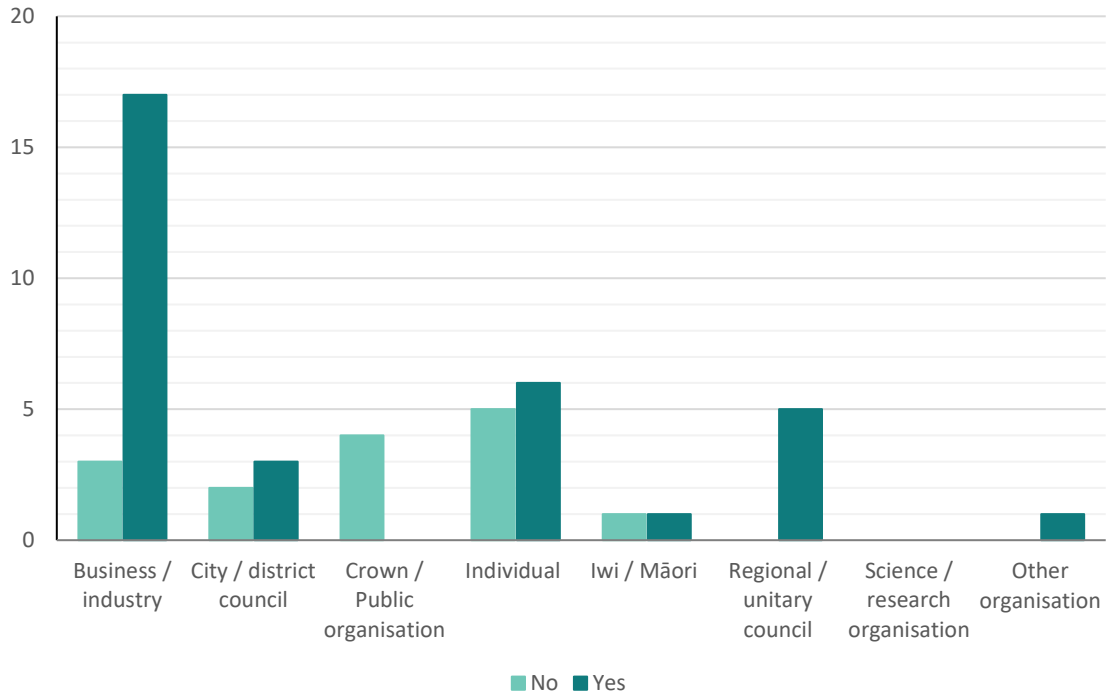
- there needs to be time for research and development of new burners
- manufacturers need enough time to clear stock that may no longer meet the standard
- homeowners who have purchased non-compliant burners or applied for a building consent to install them should have time to replace them
- a shorter lead-in might place a financial burden on low-income households that would have to replace their burner earlier than anticipated.

### *Other comments*

- In the interest of public health, lead-in timeframes should be as short as practicable. However, longer timeframes may be necessary due to the cost, technology and new procedures required to make the transition.
- The Government should be responsible for educating communities about the amendments and compliance.
- The Government should provide financial support to councils to help the transition.
- Longer lead-in times may be necessary to transition to compliant heating appliances. Shorter lead-ins could place financial stress on low-income households and could increase winter morbidity and mortality.

## Q22. Are there any matters you think would require transitional provisions? If so, what?

Figure 18: Question 22 Responses



Total responses: 48

### Summary of feedback

#### *Other matters that would require transitional provisions*

- Changes to regional plans.
- Households switching from non-compliant to compliant burners.
- Air discharge consents that are being processed when the amendments are gazetted.
- Existing burners that have not reached the end of their life span.
- Newly installed burners.

## Other comments

### Q23. Do you have any other comments you wish to make?

Total responses: 93

### Summary of feedback

Further comments on the proposals included:

- Some councils will need more resourcing to successfully implement these proposals, particularly in light of budget restraints due to COVID-19.
- The proposed amendments should be implemented with a sense of urgency.

- The NESAQ should be more widely reviewed, particularly the standards for other sources of air pollution.
- Community education and behaviour change programmes will be necessary for successful implementation.
- Subsidies, loans, and other government incentive programmes for clean heating should be expanded.
- The Ministry should provide updated NESAQ guidance to councils.
- The amendments should align with other national direction under the Resource Management Act 1991.

## Iwi and Māori

These questions were included in the kaupapa summary and online form to support the proposal.

**Q24. Does your whānau, hapū or iwi use a solid fuel burner for heating your kainga, wharenui or other buildings, for example, at the marae? What impact do you think the proposed amendments may have? How else do you think the proposed amendments to the NESAQ will impact your whānau, hapū and iwi?**

Figure 19: Question 24 Responses



Total responses: 4

Agree: 1

Do not agree: 3

### Summary of feedback

Of the four responders, one answered yes that their whānau, hapū or iwi does use a solid fuel burner for heating their kainga, wharenui or other buildings.

Submitters noted that the amendments were unlikely to significantly affect their marae, because emissions in their airshed are largely industrial.

### Q25. As the Government, we need to meet our treaty obligations. Regional councils will need to consider how they partner with iwi to implement the proposed amendments. Do the proposed amendments provide for this?

Figure 20: Question 25 Responses



Total responses: 3

Agree: 1

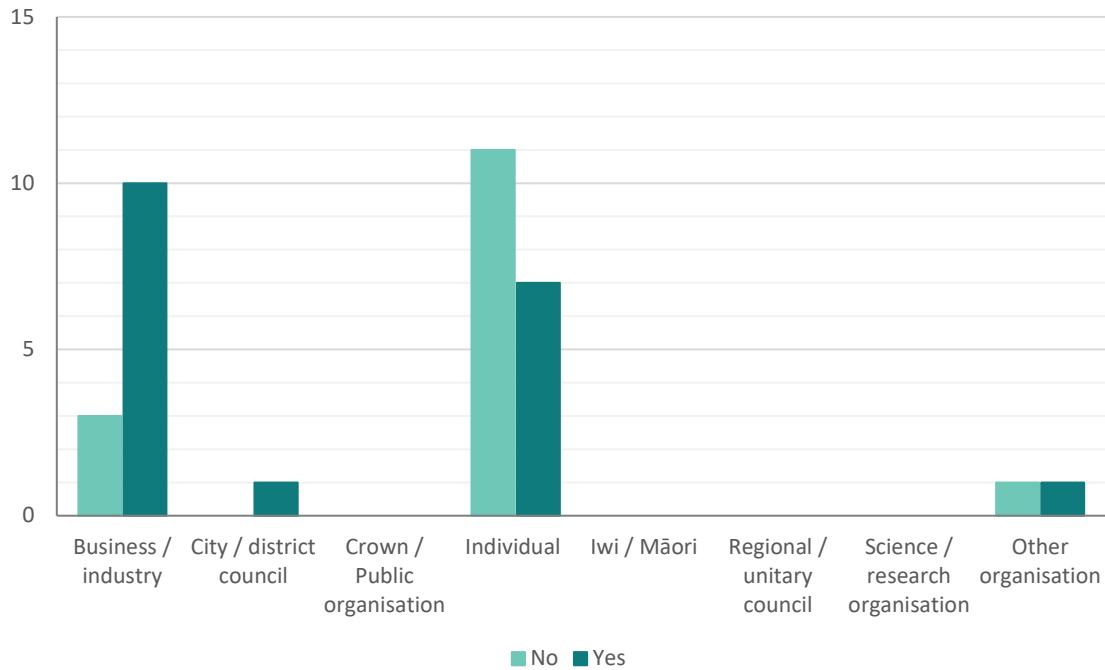
Do not agree: 2

### Summary of feedback

Of the three responders, one agreed that the amendments provide for partnership between regional councils and iwi to implement them.

**Q26. The proposals will gradually reduce PM<sub>2.5</sub> emissions from domestic solid-fuel burners by requiring newly-installed burners to meet stricter standards. Do you think this is the best approach?**

Figure 21: Question 26 Responses



Total responses: 34

Agree: 19

Do not agree: 15

**Summary of feedback**

The responses for this question were mixed. Many submitters suggested that a faster approach should be taken to ban or remove woodburners to improve health outcomes. Others argued that the gradual approach has worked to improve air quality since the standards were introduced in 2004.

**Q27. What else do you think the Government should consider in this process of amending the Air Quality Standards to increase the mauri of the air we breathe and decrease health effects associated with poor air quality?**

Total responses: 33

Some submitters which replied to this question noted the need for both PM<sub>2.5</sub> and PM<sub>10</sub> standards. Others noted the need to reduce emissions from woodburners and promote other forms of home heating. Several mentioned the need for education programmes on air quality and heating sources.

## Comments on other legislation and policy

Some submitters questioned the timing of the amendments. They raised concerns that the NESAQ might change under the review and reform of the Resource Management Act 1991.

Others noted that the proposed amendments should align with the Climate Change Response (Zero Carbon) Amendment Act (2019) and national direction under the Resource Management Act 1991, such as the National Policy Statement for Urban Development 2020.

Some councils noted that they might need extra time and resources to carry out the amendments to the NESAQ, due to significant new national direction.



# Glossary

<b>AS/NZS 4013:2014</b>	Australian/New Zealand standard for solid fuel burning appliances
<b>BAT</b>	Best Available Technologies
<b>BEP</b>	Best Environmental Practices
<b>CM1</b>	Canterbury Method for testing solid fuel burners which provides flexibility to allow both conventional and radically different designs of wood burner
<b>g/kg</b>	Grams per kilogram
<b>LEB</b>	Light emission burner
<b>mg/MJ</b>	Milligram per megajoule
<b>NESAQ</b>	Resource Management (National Environmental Standards for Air Quality) Regulations 2004
<b>NAQWG</b>	National Air Quality Working Group which includes air quality science and regulatory practitioners from all regional councils
<b>PM<sub>2.5</sub></b>	Fine airborne particles which are smaller than 2.5 microns in size
<b>PM<sub>10</sub></b>	Fine airborne particles which are smaller than 10 microns in size
<b>Policy SIG</b>	Regional Policy Special Interest Group which is comprised of policy practitioners from regional councils
<b>RMA</b>	Resource Management Act 1991
<b>ULEB</b>	Ultra-light emission burner
<b>WHO</b>	World Health Organisation
<b>µg/m<sup>3</sup></b>	Micrograms (one-millionth of a gram) per cubic meter