



Consultation document

Phasing out fossil fuels in process heat

National direction on industrial greenhouse gas emissions



Ministry for the
Environment
Manatū Mō Te Taiao

New Zealand Government

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Message from the Minister

Climate change is an unprecedented challenge – it affects global communities, world economies, and therefore New Zealand as a whole. Without collective global action to reduce and stabilise greenhouse gas emissions, global temperatures are projected to increase by 3-5 degrees Celsius during the 21st century.

If we do not reduce greenhouse gas emissions significantly over the coming decades, the damage to our environment and quality of life could be significant and irreparable.

This is why this Government is committed to acting on climate change. In 2019, we set emissions reduction targets in law and established a system of emissions budgets to act as five-yearly ‘stepping stones’ towards our 2050 targets. Government will release the emission reduction plan by the end of the year. This will include policies for meeting the first three emissions budgets.

We want to ensure we are building a low emissions and climate resilient economy that is better for the environment, protects our natural and physical resources, and improves the lives of all New Zealanders.

One of the biggest opportunities to reduce CO₂ emissions in Aotearoa is through the decarbonisation of process heat. Existing policy tools under the Resource Management Act 1991 (RMA) such as national direction can effectively target greenhouse gas emissions from process heat through regulating the use of fossil fuel in the industry.

The Government is delivering on a key election commitment to tackle climate change, by banning new low and medium temperature coal-fired boilers.

The proposals and options in this document will delve further into how we can effectively reduce industrial greenhouse gas emissions through requiring and incentivising industry to adopt more energy efficient practices. It upholds the purpose of the RMA, particularly on the efficient use and development of natural and physical resources, efficiency of the end use of energy, effects of climate change, and the benefits to be derived from the use and development of renewable energy.

We are presented with an opportunity to shape the future of Aotearoa by developing a resource management system that supports our transition to low emissions economy.

I invite you to have your say on the proposals and options in this document. Your voice in this process matters because we can only strengthen our economy and leave a great legacy behind if we are all in this together.

Hon David Parker
Minister for the Environment

Executive summary

Climate change is a global problem that is having significant impacts on the environment, people and economies across the world. To be successful in limiting the most harmful impacts of climate change, all countries need to contribute to reducing greenhouse gas (GHG) emissions. New Zealand is committed to supporting a just transition to a low-emissions economy. Under the Climate Change Response (Zero Carbon) Amendment Act 2019 (the CCRA), the Government has set a 2050 statutory target of net zero GHG emissions (other than biogenic methane) and a framework to guide domestic climate actions as they transition into a low-emissions economy.

Currently under the Resource Management Act 1991 (RMA), regional councils are prevented from considering the effects of GHG emissions on climate change when making air discharge rules and considering applications for air discharge permits. These current barriers will be removed on 31 December 2021 as a result of the Resource Management Amendment Act 2020 which sets out three amendments relating to climate change mitigation. These changes will enable local authorities to consider the effects of GHG emission on climate change in RMA decision-making and will also require local authorities to 'have regard to' emission reduction plans and national adaptation plans under the CCRA when preparing RMA plans and policy statements.

There is currently an absence of provisions in RMA plans and policy statements to support local authority decision-making on GHG emissions or climate change mitigation when these amendments take effect. Existing air discharge rules are not fit-for-purpose to address GHG emissions and support the transition to a low-emissions economy as these are designed to address different effects. This absence of provisions under the RMA on GHG emissions is likely to result in inconsistent approaches, uncertainties and other outcomes that are contrary to the purpose of the RMA and New Zealand's wider climate change goals. RMA national direction can be used to address the current policy and regulatory gaps and ensure a level of national consistency and certainty in the management of GHG emissions under the RMA.

We are proposing RMA national direction on industrial GHG emissions which is focused on GHG emissions from the burning of fossil fuels for 'process heat' as this is where we see significant opportunities to reduce emissions and considerable risks if direction is not given. Process heat currently contributes about eight per cent of New Zealand's total GHG emissions and makes up 17 per cent of emissions covered under the net zero target. The intention for national direction is to support decarbonisation in process heat by acting as a regulatory backstop, which will be a critical policy in supporting New Zealand meet its first set of emissions budgets.¹

Government has committed to prohibit the installation of any new coal-fired boilers for low and medium temperature process heat. The proposals in this discussion document would effectively implement this ban and begin a gradual phase out of existing coal and other industrial fossil fuels. The proposals will also incentivise industry to adopt more energy efficient practices to support New Zealand's transition.

¹ In developing the heat, industry and power (HIP) sector strategy for the first Emission Reduction Plan, Government has identified that an effective approach to decarbonising process heat will require an effective emission price, incentives and support, and 'regulatory backstops' that act as bottom lines to ban and phase out the further use of fossil fuels.

Despite focusing on industrial GHG emissions at this time, there are a number of other sectors where the resource management system could play a role in driving down emissions, for example, transport, urban form, forestry, agriculture and waste as well as broader opportunities within the energy sector. The Government is undertaking a comprehensive review of the resource management system which will provide opportunities for reducing emissions in an integrated way throughout this legislation. The intention is for a more fulsome package of national direction on climate change to be developed through the new system.

This document also seeks feedback on releasing non-statutory guidance alongside national direction, which will support decisions under the RMA on all GHG emissions (direct and indirect sources). This would act as interim direction to guide decisions related to GHG emissions until the new resource management system is in place.

The proposed national direction instrument is a combination of national environment standards (NES) and national policy statement (NPS) provisions that will set out nationally consistent rules and requirements to guide regional councils in their decision making on industrial GHG emissions and support the decarbonisation of process heat.

The options and analysis for national direction on industrial GHG emissions in this consultation document present a policy package for a low emissions transition in process heat. The policy objectives of the proposal are to:

1. achieve national consistency and certainty in the management of industrial greenhouse gas emissions under the RMA
2. reduce industrial GHG emissions to mitigate the adverse effects of climate change and support New Zealand's transition to a low emissions economy.

The policy objectives of the proposal are consistent with the purpose of the RMA – to promote the sustainable management of natural resources – and will assist with New Zealand's broader climate change goals. The policy options outlined in this document focus on the following areas:

- avoiding/prohibiting new fossil fuel-fired discharges in process heat and a more rigorous approach for new coal-fired assets compared to other fossil fuels (for new industrial assets)
- accelerating the phase out of fossil fuels in process heat and support the transition to lower emission fuels (for existing industrial assets)
- greenhouse gas management plans that support best practice to reduce emissions and transition to low emissions.

Sections 1 and 2 of this consultation document provide an overview of the context for national direction on industrial GHG emissions. Section 3 of this consultation document outlines the proposed policy options and potential alternatives and seeks feedback on specific aspects of the proposal to help achieve our intent.

The intention is that national direction is in place by 31 December 2021 when the amendments in Resource Management Amendment Act 2020 relating to climate change mitigation take effect. This will support local authority decision-making and aligns with the timeframes to produce the first emissions reduction plan under the CCRA.

The Government acknowledges the importance of ensuring this transition is just and inclusive for all New Zealanders today, and for future generations.

Section 1: Introduction and context

This section outlines the context for the changes the Government is working towards for climate change, resource management and industrial greenhouse gas (GHG) emissions.

New Zealand's resource management system

Resource Management Act 1991

The Resource Management Act 1991 (RMA) is New Zealand's principal environmental legislation. The RMA provides the regulatory framework to manage the protection, use and development of natural and physical resources, including land, freshwater, the coastal marine area, and the discharge of contaminants into air, land and freshwater. The purpose of the RMA is to promote the sustainable management of natural and physical resources in a way that enables people and communities to provide for their social, economic and cultural wellbeing. The Government is planning to repeal the RMA and replace it with three pieces of legislation as part of the comprehensive reform of the resource management system.

Under the RMA, local authorities (regional councils and territorial authorities) are responsible for most decisions on how natural and physical resources are managed through the development of plans and decision-making on resource consent applications. Central government can also develop national direction to support local authority decision-making under the RMA where it is appropriate to have a nationally consistent approach for resource management issues. Reasons for national direction under the RMA include:

- the issue is of national importance and greater direction should be provided to local authorities at a national level to give certainty
- the issue involves significant national benefits or costs
- the costs of local variation outweigh the benefits
- it is necessary to give effect to other Government policy or regulation
- the issue relates to Government obligations, including the Treaty of Waitangi/Te Tiriti o Waitangi and international obligations (for example, the Paris Agreement).

The next section provides more details on national direction instruments under the RMA and why these are the important in the context of climate change under the RMA.

Climate change considerations under the RMA

Section 7 of the RMA requires that all persons exercising functions and powers under the RMA have particular regard to:

- the efficient use and development of natural and physical resources
- the efficiency of the end use of energy
- the effects of climate change
- the benefits to be derived from the use and development of renewable energy

Under the current RMA the extent to which regional councils and consent authorities can have regard to the effects of GHG emissions on climate change is limited. This is because the Resource Management (Energy and Climate Change) Amendment Act 2004 introduced statutory barriers that prevent regional councils from considering the effects of GHG emissions on climate change when making air discharge rules (section 70A) and when considering air discharge applications (section 104E). One exception is that regional councils can consider how the use and development of renewable energy enables a reduction in the discharge to air of GHG emissions.

The 2004 RMA amendments were intended to ensure GHG emissions from significant new point sources would be addressed consistently and cost-effectively at the national level. This was expected to occur through a proposed carbon tax at the time. The New Zealand Emissions Trading Scheme (NZ ETS) was later implemented in 2008 as the preferred mechanism for introducing a price on GHG emissions. The national emissions pricing mechanism was also intended to be supported by national direction and guidance under the RMA in the form of national environmental standards on discharges to air, but this was not developed.

The 2004 RMA amendments that have prevented councils from considering the effects of GHG emissions on climate change applied to the functions of regional councils in relation to the making of air discharge rules and considering applications for air discharge permits. The Supreme Court² interpreted the 2004 RMA amendments widely, concluding that these amendments were intended to prevent councils from considering GHG emissions that result indirectly from activities under the RMA (such as land-use activities like coal mining). The result of the 2004 RMA amendments and subsequent case law is that climate change mitigation is not considered in RMA planning and decision-making.³

Resource Management Amendment Act 2020

The Resource Management Amendment Act 2020 was passed at the end of June 2020 and included three amendments relating to climate change mitigation:

1. Removing the statutory barriers to regional councils considering the effects of GHG emissions on climate change when making air discharge rules and assessing applications for air discharge permits (repealing sections 70A, 70B, 104E and 104F of the RMA).
2. Requiring local authorities to “have regard to” emission reduction plans and national adaptation plans published under the CCRA when preparing regional policy statements, regional plans, and district plans.
3. Enabling a Board of Inquiry or the Environment Court to consider the effects of GHG emissions on climate change when a matter is called in as a proposal of national significance.

The effect of the first amendment is that regional councils will no longer be prevented from considering the effects of GHG emissions on climate change when making air discharge rules and considering air discharge permit applications. The first two amendments will come into force on 31 December 2021.⁴ The delayed commencement date is to align with the timeframes

² *West Coast Environment v Buller Coal Ltd* [2012] NZSC 87.

³ However, it is noted that the recently gazetted National Policy Statement for Urban Development 2020 requires planning decisions relating to urban environments to support reductions in GHG emissions.

⁴ Although the Resource Management Amendment Act 2020 also includes provision for the Governor-General, by Order in Council, to delay these amendments coming into force no later than 30 November 2022.

to produce the first emissions reduction plans under the CCRA. This date also gives time to ensure that national direction be in place when the amendments come into effect and on the basis that local authorities will need nationally consistent rules on managing significant GHG discharges to air.

Reforming the resource management system

The Government is undertaking a comprehensive review and reform of the resource management system and plans to repeal the RMA and replace it with three new pieces of legislation. It is therefore critical that any new proposed national direction under the RMA is designed to be readily transferable to the new resource management system and be consistent with the overall objectives for reform, which include better mitigation of emissions contributing to climate change.

The Natural and Built Environments Act (NBA) is the main legislation proposed to replace the RMA. The focus of the proposed NBA will be on enhancing the quality of natural and built environments and achieving positive outcomes to support the wellbeing of present and future generations. The draft outcomes for the proposed NBA include reducing greenhouse gas emissions, promoting activities that mitigate emissions or sequester carbon, and increasing the use of renewable energy. Under the proposed NBA, the new 'National Planning Framework' would replace existing national direction and provide a set of mandatory national policies and standards on specified aspects of the new resource management system.

The Government intends to introduce the proposed NBA into the House by the end of 2021, following an 'exposure draft' select committee process, and for the new legislation to be passed by late 2022. The Government will continue to work to ensure that this proposal for national direction on GHG emissions is consistent and aligned with the wider reform of the resource management system.

New Zealand is committed to taking action on climate change

International context

Human-induced climate change is a global problem requiring a global response. Without collective global action to reduce GHG emissions, global temperatures are projected to increase by 3-5°C during the 21st century. This would have significant and long-term adverse effects on the global economy, societies and ecosystems.

New Zealand, together with the rest of the world, is committed to taking action on climate change. In 2015, almost every nation agreed to keep global average temperature rise to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C. Parties to the Paris Agreement also agreed to aim to reach peak global GHG emissions, as soon as possible, and to aim for net zero emissions in the second half of the century.

New Zealand will play its part in meeting the 1.5°C goal by reducing emissions, planting more trees and working with other countries to reduce emissions. However, emissions forecasts based on our current policies show that we are not on track to meet this target. We will need a much greater reduction in emissions to meet our commitment.

Domestic context

While New Zealand is responsible for around 0.17 percent of annual global GHG emissions, its climate is impacted by the accumulation of GHG emissions from all countries. New Zealand temperatures have already risen by about 0.9°C in the past 100 years. Over the past century, sea levels at New Zealand ports have risen between 14 and 22 centimetres.

Reducing domestic emissions poses a significant challenge for New Zealand. Despite an overwhelmingly renewable electricity system and a sizeable forestry sector by international standards, New Zealand has among the highest per capita GHG emissions in the world.

Climate Change Response Act 2002

The Climate Change Response Act (CCRA) provides a framework by which New Zealand can develop and implement clear and stable climate change policies that allow us to meet our international obligations. The CCRA was amended by the Climate Change Response (Zero Carbon) Amendment Act 2019. This provides a framework for New Zealand to develop and implement clear, stable and enduring climate change policies that contribute to the global effort under the Paris Agreement to limit the global average temperature increase.

The Climate Change Response (Zero Carbon) Amendment Act 2019 introduced five key mechanisms:

1. 2050 GHG emissions reduction target
2. framework of emissions budgets to act as “stepping stones” towards the long-term target
3. requirement on the Government to develop and implement policies for reducing emissions
4. adaptation and resilience measures to identify and prioritise key risks and develop a plan to address them
5. a new, independent Climate Change Commission.

The Climate Change Commission is responsible for providing expert advice to future Governments and monitoring progress towards emissions budgets, the 2050 target and the success of the emissions reduction plan.

Emissions budgets and the first emissions reduction plan

The Government is required to gazette the first three emissions budgets and an emissions reduction plan (ERP) for meeting the first emissions budget by 31 December 2021. Under the CCRA, the first emissions reduction plan must include measures to:

- align system settings to enable the transition
- use cross-sector tools, including the New Zealand Emissions Trading Scheme (NZ ETS), to support abatement across the whole of the economy
- target key abatement opportunities and transition critical sectors with sector-specific interventions
- address the distributional impacts of the transition.

To be effective, emissions reduction policy should be integrated with economic strategy and post-COVID recovery initiatives; strategies for industry, infrastructure, housing and urban development; fiscal management; and plans for building resilience to the physical effects of

climate change. If well-designed, policies to reduce domestic emissions can also support regional economic activity, recovery from the economic consequences of COVID-19, and other government objectives.

Delivering emissions budgets and the ERP will require decisions to be made across a range of portfolios and should be supported by an integrated and coordinated approach. Preparatory work is underway among agencies in the areas of transport; agriculture and forestry; heat, industry and power; building and construction; waste; multi-sector issues; and distributional impacts.

In order to support the first set of emissions budgets it will be essential to capture abatement opportunities at the lower end of the marginal abatement cost curve (MACC).⁵

Distributional impacts

The ERP will also include a strategy to mitigate the impacts of reducing emissions. Impacts of the proposals outlined in this document (if implemented) will impact people and communities, and preliminary impacts are discussed within each option. The strategy to manage distributional impacts requires a coordinated response across a number of portfolios. The ERP will set out a suite of measures to reduce losses in wellbeing while maintaining the intent of emission-reduction policies.

Accelerating Renewable Energy and Energy Efficiency

In December 2019, the Ministry for Business, Innovation and Employment (MBIE) released the discussion document '*Accelerating Renewable Energy and Energy Efficiency*' (AREEE) (MBIE, 2019a), with public consultation closing in February 2020. This discussion document focuses on two major work streams:

- **Part A:** encouraging energy efficiency and the uptake of renewable fuels in industry
- **Part B:** accelerating renewable electricity generation and infrastructure.

Of particular relevance to this consultation document are the issues and options outlined in section 4 of the AREEE discussion document – phasing out fossil fuels in process heat. Submitters expressed both strong support and opposition to the proposal to phase out fossil fuel in the discussion document, with a number of issues raised.⁶ This feedback has informed the identification and assessment of options in this consultation document.

⁵ A MACC is an estimate of the volume and costs of opportunities to reduce emissions in a given year.

⁶ Submissions available at <https://www.mbie.govt.nz/have-your-say/accelerating-renewable-energy-and-energy-efficiency>.

Section 2: Problem definition and objectives

There is a need for national direction on greenhouse gas emissions

The RMA prevents regional councils from considering the effects of GHG emissions on climate change when making air discharge rules and considering applications for air discharge permits – it does not prevent rules and consents regulating GHG emissions. The implication is that existing air discharge rules and permits that regulate the ‘discharge of contaminants into air’ also regulate (and authorise) GHG emissions as part of the overall discharge (as GHG emissions are a ‘contaminant’ under the RMA). This has resulted in consents being granted that authorise the discharge of GHG emissions, even though regional councils could not consider the effects of the discharge on climate change when the consent was granted.

Amendments to the RMA have created a regulatory gap under the RMA in managing the effects of the discharge of GHG emissions on climate change. Existing air discharge rules are not fit-for-purpose to manage GHG emissions as they are designed to address different effects (ie, air quality) rather than address climate change effects (as this was not a permissible consideration). Regional plans generally have more lenient rules for the burning of fossil fuels for process heat compared to lower emission fuels with higher particulate matter (for example, wood, biomass). As a consequence, many regional plans enable significant GHG emissions to occur as a permitted activity (subject to compliance with other conditions).

For example, a review of regional fuel combustion rules found that permitted activity thresholds for natural gas are typically around 10 MW (range 4-50 MW) and typically around 1-2 MW for wood (considered a carbon-neutral fuel source). The need to address industrial emissions is also more pressing due to the general restriction in section 15(1)(c) of the RMA that no person can discharge contaminants into air from an industrial or trade premises unless expressly allowed by NES, regulation or regional rule. There is also an absence of provisions (objectives and policies) in RMA policy statements and plans to support decision-making on GHG emissions or on climate change mitigation more generally. The consequence is that it will be very difficult for decision-makers to assess and scrutinise applications involving GHG emissions in terms of the effects of that discharge or activity on climate change through RMA consenting and planning processes. This also has the potential to result in complex case-by-case assessments whereby applicants can argue the effects of their individual GHG emissions on the ‘environment’ and climate change are negligible.

Further, air discharge permits associated with the burning of fossil fuels are often granted for long periods (20-35 years), effectively ‘locking-in’ these emissions well into the future (and beyond 2050 in some cases).⁷ Coal boilers have an economic lifespan of about 25 years, and are often consented (and re-consented) to be used for much longer periods (some coal boilers have been used for over 40 years). If new long-lived fossil fuel assets are built, this will require steeper reductions in the future, increase the costs of transitioning, and make it significantly harder to achieve New Zealand’s emission reduction targets. There are currently no RMA

⁷ For example, a review of 45 air discharge permits found that 27 have an expiry date of 2030 or later, 12 have an expiry date of 2040 or later, and four have an expiry date after 2050 (with a mean expiry date of 2034). Examples of emission intensive discharges with long-term permits in the sample include the discharge of contaminants into air from three coal-fired boilers (50 MW total) authorised until 2042 and the discharge of contaminants into air from four coal and oil boilers (140 MW total) authorised until 2045.

provisions that prevent these outcomes. The RMA is the only tool available for regulating use of fossil fuels at existing industrial sites. National-level regulation, such as minimum energy performance standards under the Energy Efficiency and Conservation Authority Act 2000, can only regulate new boilers. However, phasing out existing boilers is where the bulk of the potential emissions reductions lies.

The repeal of the statutory barriers in the RMA to considering the effects of the discharge of GHG emissions on climate change does not impose a positive obligation on regional councils or consent authorities to consider these matters. The manner in which regional councils and consent authorities approach climate change mitigation under the RMA could vary from region to region and in light of the particular factual situation. The regulatory and policy vacuum under the RMA in relation to GHG emissions exacerbates this issue and is likely to result in inconsistent approaches, uncertainties and other outcomes that are contrary to the purpose of the RMA and New Zealand's wider climate change goals.

RMA national direction can be used to address these policy and regulatory gaps and ensure a level of national consistency and certainty in the management of GHG emissions under the RMA. The importance of national direction to support the amendments relating to climate change mitigation in the Resource Management Amendment Act 2020 was articulated by the Environment Committee in their report as follows:

“We acknowledge that it will be vital to have direction at a national level about how local government should make decisions about climate change mitigation under the RMA. Otherwise, there could be risks of inconsistencies, overlap of regulations between councils and emissions pricing, and litigation. Therefore, we recommend a delayed commencement for these changes, of 31 December 2021, to ensure there is sufficient time to make the policy arrangements...”

In addressing this policy and regulatory gap, there is an opportunity to use national direction to drive process heat decarbonisation and promote energy efficiency and greater use of renewable energy within industry. This is further explained below.

Why is there a focus on industrial emissions from process heat?

One of the biggest opportunities to reduce industrial emissions is through the decarbonisation of process heat (MFE, 2020).

An effective approach to decarbonising process heat will require:

1. an effective emissions price
2. a mix of incentives and support to directly support emissions reductions as well as alleviate distributional impacts
3. regulatory backstops that ban, discourage or seek to minimise further use of fossil fuels.

The intention for national direction on industrial GHG emissions is to support decarbonisation in process heat by acting as a regulatory backstop,⁸ which will be a critical policy in supporting New Zealand meeting its first set of emissions budgets.

⁸ That is, regulation that will act as a bottom line in conjunction with pricing mechanisms and government incentives.

The Ministry for the Environment's preliminary modelling suggests that the emissions of industries covered by the proposals will reduce by 2.1 to 2.7 mega tonnes (MT) CO₂-e by 2037, with emissions reductions attributable to the proposal estimated to be between 0.5 and 0.8 MT, and the NZ ETS driving 0.3 to 0.4 MT (assuming \$35/t). The residual emissions reductions are assumed to occur under baseline without policy intervention. In 2035, emissions are estimated to reduce by 2.8 to 3.5 MT, with the proposal responsible for 1 to 1.4 MT and the NZ ETS driving 0.3 to 0.4 MT (assuming \$35/t). Larger reductions occur in later years.

A minimal decline in industrial emissions is expected under business-as-usual out to 2050. This is due to a range of domestic and international market arrangements and a rising emissions price over time. New developments in technology will support sector decarbonisation, as will the development of alternative fuel markets.

The emissions price has not been strong enough to drive emissions reductions at the scale necessary in process heat to date. This is in part due to the industrial allocation scheme, whereby emitters who are emissions intensive and trade exposed are not subject to the full NZ ETS obligations. This is also because low emissions prices have had a small or negligible impact on the economics of firm-level decisions regarding the renewable and efficient use of process heat. Even with the changes to the NZ ETS in 2020, the current price (around \$40 per New Zealand Unit) means that renewable fuels are relatively more expensive than fossil fuels. Incentives, such as the Government Investment in Decarbonising Industry Fund, will help firms with the upfront cost of switching to renewables. Supporting regulation will ensure businesses transition out of fossil-fuelled technologies by discouraging and minimising further use, in order to meet emissions budgets.

Therefore the policies outlined in this discussion document will be an important part of the overall policy mix, to support a just transition out of fossil fuels in the industrial sector. The sufficiency of the NZ ETS in driving down industrial emissions is further explored in the following section on the status quo.

Low, medium and high temperature requirements

Process heat is the thermal energy used to manufacture products in industry. Process heat is generated for a number of purposes, including converting milk into powder, wood pulp into paper, metal production and chemical production (for example, methanol). Industrial process heat generates around 8 per cent of New Zealand's GHG emissions and is the second largest source of energy-related emissions after transport (approx. 27 per cent of energy-related emissions).

Modelling suggests that accelerated electrification in process heat could result in emissions savings of about 2.6 Mt CO₂-e by 2035. The Climate Change Commission's recommended path and scenarios show the potential for 2 Mt CO₂-e by 2035. Emissions reductions can be achieved through fuel switching to biomass or biogas or improving the energy efficiency of existing processes. Decarbonising industry over the first set of emissions budgets presents a significant opportunity to support our climate change targets.

Industrial processes have very different scale and temperature requirements which also determine viable fuel options. Temperature requirements for process heat are generally classified as low, medium or high as follows:

Table 1: Temperature requirements and percentages⁹ of total process heat

Category	Temperature requirements	Uses	Examples
Low	Less than 100°C	Water heating Space heating	Sanitisation of equipment in the food processing sector
Medium	Between 100 and 300°C	Industrial processes	Drying wood products Drying food products, such as milk powder
High	Greater than 300°C	Industrial processes	Oil refining Melting metals Chemical manufacturing

A relatively small number of super large ‘highly or tightly integrated’ plants (production of petroleum, chemicals and rubber (largely methanol) fuelled by gas and coal) have high temperature requirements and make up 39 per cent of process heat requirements. However, there is also less potential to decarbonise high temperature requirements due to a lack of viable alternatives. Low and medium temperature heat make up 12 per cent and 48 per cent of total process heat emissions respectively. Around 95 per cent of low and medium temperature heat is generated in boilers.

The New Zealand Emissions Trading Scheme is the Government’s primary intervention into process heat investment (the status quo)

As noted above, the industrial sector is responsive to price and emissions pricing will be central to incentivising emissions reductions in this sector. This is because it creates a relative price differential between fossil fuels and other low-emissions fuel sources such as electricity and biomass.

To date, fossil fuel technologies have remained viable investments for industry. As it is generally more economic to make adjustments to existing technology rather than investing in replacement, assets are often extended past their technical lifetime. This can result in decades of operational use, and older technology generally become higher emitting.

Energy investments in the industrial sector tend to be capital intensive (and therefore long term) and firms generally prioritise short term business investments over sustainability decisions (EECA, 2018). This allows for continued investment in and operation of emission-intensive assets, with steeper reductions in the future required. The establishment of new fossil fuel assets is likely to increase the costs of transitioning and the risk of stranded assets, and make it significantly harder to achieve New Zealand’s emissions reduction targets.

Some firms are beginning to switch away from fossil fuels, due to anticipation of higher emissions prices and other drivers. For example, Synlait installed a 6MW electric boiler at one of its plants. Similarly, Fonterra has replaced its coal use with biomass at its Te Awamutu plant.

The NZ ETS remains a critical lever to drive emissions reduction in New Zealand. Pricing emissions is an efficient and effective tool that works as part of a wider policy package to ensure a cost-effective and just transition. If the emissions price rises over time as expected, industries which are large fossil fuel users will face increasing energy costs. This creates an incentive to reduce fossil fuel use through energy efficiency improvements and fuel-switching opportunities.

⁹ EECA (2019) Energy End Use Database.

But there are also many emissions reductions options available that are not responsive to the NZ ETS price signal, due to the presence of barriers at the prevailing price level. These emissions reductions can be cost-effectively captured through other regulatory measures, sector specific policies and direct government investment. A much higher price or additional policies are needed, particularly where business-as-usual emissions reductions trajectories will not be sufficient to support meeting our targets.

In a summary of submissions on the *'Process Heat in New Zealand: Opportunities and barriers to lower emissions'* consultation paper (MBIE, 2019b), most submitters from across a broad range of stakeholders highlighted the importance of regulatory certainty and the role of the emissions price in driving action. Most large energy users agreed that the New Zealand Emissions Trading Scheme (NZ ETS) to 2018 had not had a significant impact on process heat investment decisions. The New Zealand Business Energy Council noted that “the future price of carbon is highly uncertain, and businesses are careful when making large investments which involve high short-term costs and larger capital expenditure based on future uncertain carbon prices”. The Government is yet to take decisions on how high the emissions price will be enabled to rise, and the right mix of policies and price to support meeting emissions budgets.

There is strong evidence through MACC modelling and stakeholders confirming that NZ ETS and emissions price have had minimal impact on process heat investment decisions to date.

While the emission price has risen since then, under the status quo there is still insufficient incentive for firms utilising process heat to switch away from coal and gas. Modelling undertaken by the Interim Climate Change Committee (ICCC) indicates that switching away from coal does not generally become economic for firms using process heat until the emissions price reaches \$60 per tonne and switching away from natural gas generally does not become economic until the price in excess of \$120 per tonne.

On this basis, the ICCC recommended that without delay, policies need to be identified that will strongly deter the development of any new fossil fuel process heat, and particularly coal. The ICCC recommended that these policies should also phase out the use of coal in process heat according to a well-defined timeline. This timeline needs to be clearly communicated so that investment certainty can be given to businesses.

Policy objectives for national direction

To address the problems and risks above, the policy objectives of the proposal are to:

1. achieve national consistency and certainty in the management of industrial emissions under the RMA
2. reduce industrial emissions and support New Zealand's transition to a low emissions economy.

In order to achieve these objectives, the national direction instrument will need to:

- have clear provisions to support consistent decision-making by local authorities: national direction needs to provide clear policy direction and implementation requirements to ensure consistent decision-making by councils. National direction should effectively guide decision-making on applications that involve GHG emissions and avoid complex and costly case-by-case assessments whereby applicants can easily argue that the individual effects of their GHG emissions on climate change are de minimis

- work alongside and complement other climate change initiatives: national direction needs to target areas where emissions pricing alone is unlikely to be effective or too slow to deliver the desired reductions. It also needs to complement, rather than duplicate, other climate change policy interventions to help New Zealand transition to a low-emissions economy. Support the transition to a low-emissions economy: national direction needs to avoid unreasonable costs on businesses or deterring new investment. It should seek to support business transition by encouraging and mandating best practice standards to reduce emissions, taking into account what is technically and economically feasible for industry. Complementary measures (eg, technical guidance and targeted support for industry) are also likely to be required to support this transition

The policy objectives of the proposal are consistent with the purpose of the RMA – to promote the sustainable management of natural and physical resources – and will assist with New Zealand’s broader climate change goals. The proposal seeks to reduce the impacts of climate change on the environment and on the well-being of people and communities. It also seeks to promote the efficient use of energy within the process heat sector and recognise the benefits of transitioning away from fossil fuels towards renewable alternatives. The proposal has also been designed in a way that makes it readily transferable to the new resource management system. A draft section 32 evaluation has also been prepared for the proposed national direction which provides a preliminary assessment of appropriateness of the objectives to achieve the purpose of the RMA and the effectiveness and efficiency of the options. However, the costs and benefits of each option have not yet been analysed in detail. One of the objectives of the consultation is to seek feedback from stakeholders on the likely benefits and costs, including the compliance costs on businesses affected by an option. Questions at the end of each section are intended to be prompts in this regard.

Emissions in and out of scope

As outlined above, the focus of national direction is on industrial emissions, and more specifically on GHG emissions from the burning of fossil fuels for process heat. There are a range of other GHG emissions that fall within the general category of ‘industrial emissions’, particularly given the broad RMA definition of ‘industrial and trade premises’.

Different policy options outlined in this discussion document apply to a different scope of industrial emissions, as set out below. Within each relevant section, the document seeks stakeholder feedback on these proposed scope and size thresholds.

- Low GHG-emitting process heat sites are excluded from the scope on the basis they do not emit significant quantities of GHG emissions. The intention is to ensure back-up energy plants are out of scope of the requirements and that other small scale discharges do not unnecessarily require resource consent. Low GHG-emitting process heat sites are defined as operating fewer than 400 hours per year or emitting below a specified threshold (for example, 50kW, 2 MW or 100 t CO₂-e/year).
- The discussion document seeks stakeholder feedback on whether commercial sector space and water heating should be included or excluded, on the basis that the issues and technology options are similar, and appropriate size thresholds would ensure smaller sites are not disproportionately affected.
- Prohibited activities and phase out rules (options 1.1 and 2.1) apply only to coal-fired assets for low and medium temperature process heat requirements. This excludes co-generation facilities. The requirements apply to boilers currently co-firing coal and biomass for process heat only. Examples include horticulture greenhouses, dairy

processing facilities, and meat processing facilities using coal. Publicly-owned coal-fired process heat sites are also in scope if they meet the thresholds, but are also subject to the Carbon Neutral Government Programme requirements, which also includes objectives to phase out coal use.

- Discretionary activities that require the preparation and implementation of a GHG emissions plan (options 1.2, 2.2, and 2.3) apply to other fossil fuel assets used for process heat, including co-generation facilities, sites with high temperature requirements and site-wide energy use at the facility.

Emissions from electricity generation (for example, coal generation at the Huntly power station, back-up diesel generators) and waste (for example, landfills), are excluded from the current scope of national direction, as discussed below.

Despite the focus on industrial emissions at this time, the reformed resource management system will have an important role across many different sectors in supporting climate change outcomes for both mitigation and adaptation. Consistent with the Resource Management Review Panel's (2020) recommendations in *'New Directions for Resource Management in New Zealand'* this will be particularly important across forestry, electricity generation, waste and across urban form, as well as in industry. The intention is for a more fulsome package of national direction on climate change to be developed through the new system. This document is also seeking feedback on how other GHG emissions (direct and indirect) should be considered through RMA plan-making and consenting processes, and whether non-statutory guidance in this area would be useful in the interim period.

Electricity generation

The National Policy Statement for Renewable Electricity Generation 2011 (NPS-REG) sets out the objective and policies for renewable electricity generation under the RMA. The purpose of the NPS-REG is to provide a consistent approach to planning for renewable electricity generation in New Zealand. It gives clear government direction on the benefits of renewable electricity generation and requires all councils to make provision for it in their plans.

The NPS-REG works alongside other government initiatives as part of New Zealand's wider response to tackling climate change. The NPS-REG is currently undergoing a review with a view to strengthening the promotion of renewable electricity and is being developed alongside the draft National Planning Framework so it can be transferred into the new resource management system.

The Government has a manifesto commitment to implement a ban on new baseload thermal electricity generation by restoring Part 6A of the Electricity Act 1992, and the intention is to engage with stakeholders before this commitment is implemented. Detailed policy is yet to be developed ahead of any consultation.

Waste emissions

The waste sector accounts for around 5 per cent of New Zealand's GHG emissions, which is primarily (90 per cent) from storage of solid waste – managed municipal landfills and smaller disposal sites. There are a number initiatives underway to manage and reduce waste in New Zealand. This includes a review of the Waste Minimisation Act 2008 and the Waste Levy.

The National Environment Standards for Air Quality 2008 (NES-AQ) also includes landfill regulations, which require the collection and destruction of methane gas at large landfill sites.

The most cost-effective approach to reduce emissions from the waste sector is not yet clear but this is likely to require a combination of initiatives. As such, the proposed approach is to exclude waste emissions from the scope of national direction at this point of time until there is more certainty on the most cost-effective method(s) to reduce New Zealand's waste emissions.

Questions – Problem definition, objectives and scope

1. Do you agree with this characterisation of the status quo? If not, please provide evidence to support your views.
2. How would you describe the status quo? What other factors should be considered?
3. Do you agree with the characterisation of the problem regarding the regulatory gap in the RMA? If not, why not?
4. Do you agree with the characterisation of the problem regarding the regulatory backstops to support the NZ ETS? If not, why not?
5. In your view, what is an effective and efficient threshold for low-GHG emitting process heat sites that would be out of scope of the requirements? Options and combinations of options include: below 100 tonne CO₂-e/year, 50kW, 2 MW, assets operating fewer than 400 hours per year. Please explain why.
6. Do you agree with the scope of industrial emissions proposed to be subject to national direction instruments? If not, why not?
7. Should commercial sector water and space heating (above an appropriate size threshold) be included in the scope of national direction? If not, why not?
8. What is your view on the proposal to exclude emissions from other sectors in the current scope (note: intention is for a more fulsome package of national direction on climate change to be developed through the new resource management system).

Section 3: Policy options to achieve national direction on industrial GHG emissions

The following section sets out the proposed national direction on industrial GHG emissions under the RMA (the proposal) and other options to address the issues and opportunities discussed in the previous section.

National direction instruments

There are a number of potential national direction instruments under the RMA, including national environment standards (NES), national policy statements (NPS), national planning standards, and regulations made under section 360 of the RMA. The sections below set out the national direction instruments that have been considered to achieve the policy objectives of the proposal as set out above.

National Environmental Standards

NES are regulations made under sections 43-44A of the RMA. NES prescribe standards for environmental matters and can operate as plan rules to provide nationally consistent and certain resource consent requirements and standards for regulated activities. NES generally prevail over plan rules, except where an NES expressly states plan rules can be more stringent or lenient.

Sections 43-43A of the RMA set out the scope and content for NES, which can include qualitative and quantitative regulations to address the matters in section 15 of the RMA (discharge of contaminants under section 43(1)(a)(i)). An NES may also contain regulations that prohibit an activity, permit an activity,¹⁰ require resource consent for an activity, or place conditions on an activity. An NES can also state that consent may be granted subject to specified terms and conditions within the standard, including the duration of the consent. An NES may require local authorities to review regional land use consents, discharge permits and coastal permits (section 43A(1)(f)).

In relation to the discharge of industrial GHG emissions, an NES could:

- prohibit the discharge of industrial GHG emissions from the burning of certain fossil fuels
- set nationally consistent rules for the discharge of industrial GHG emissions
- set maximum duration of consent to avoid the long-term lock-in of industrial GHG emissions
- set nationally consistent best practice standards (which can be incorporated by reference)
- set out requirements for GHG emissions plans (for example, as a schedule in the NES).

¹⁰ Although section 43A(3) states that an NES must not permit an activity that has significant adverse effects on the environment.

An NES therefore has the potential to be an effective and efficient option to achieve the policy objectives. It can provide a high level of national consistency and certainty in the regulation of industrial emissions. Rules and standards within an NES also have the potential to be effective to reduce industrial emissions through best practice requirements and avoiding/phasing out emission intensive fuels in the industrial sector.

The key limitation of an NES is that it cannot include objectives and policies to guide decision-making on GHG emissions, although matters of control and discretion can assist (where applicable) for controlled and restricted discretionary activities. The absence of supporting policy direction within an NES limits the effectiveness of discretionary and non-complying status to regulate GHG emissions and may require a blunter, inflexible instrument to deliver the policy content (eg, greater reliance on prohibited activity status to achieve certain outcomes).

National Policy Statements

National Policy Statements (NPS) state objectives and policies for matters of national significance that are relevant to achieving the purpose of the RMA. NPS may also include more specific direction on how the objectives and policies are to be given effect to in policy statements and plans. An NPS must be implemented by councils through subordinate planning and consenting processes as follows.

- Policy statements and plans must be prepared **in accordance with** an NPS.
- Policy statements and plans must **give effect to** an NPS.
- Consent authorities must **have regard to** relevant provisions of an NPS when considering consent applications.

In relation to the discharge of industrial emissions, an NPS could:

- provide strong policy direction to 'avoid' GHG emissions from the use of certain fossil fuels for process heat
- set out matters/criteria to consider when assessing resource consent applications to discharge industrial GHG emissions
- provide policy direction to phase out use of fossil fuels for process heat
- set limits or constraints on content of regional plans (eg, the regulation of GHG emissions from certain sectors).

A recognised benefit of an NPS is that it can allow for a degree of flexibility to councils to provide for local context. However, the rationale for providing regional flexibility is limited in relation to GHG emissions as these discharges do not have localised effects and the effects of a GHG emission discharge are the same regardless of where that discharge occurs. Allowing different regional approaches also creates the potential risk of regional emissions leakage and other outcomes that are contrary to New Zealand's broader climate change goals (eg, undermining obligations under the NZ ETS).

Another key limitation of a standalone NPS is the time-lag for councils to give effect to the provisions. An NPS can require objectives and policies to be directly inserted into plans and consent authorities would be required to have regard to the relevant provisions under section 104(b)(iii) of the RMA as soon as they come into effect. However, it would still take some time for regional councils to introduce specific rules into their regional plans to regulate GHG

emissions.¹¹ In the interim, GHG emissions would be regulated through existing air discharge rules and the NPS will have no impact on permitted activities and limited/no impact on controlled and restricted discretionary activities (as the scope of matters to consider will not include climate change). This is a particular issue given some of the permitted activity thresholds for industrial emissions are relatively high. The overall implementation costs of each regional council developing their own provisions to give effect to the NPS are also likely to be substantially greater than a set of nationally consistent provisions introduced at the central government level. NES supported by a targeted NPS – preferred option.

Preferred national direction instrument

The preferred national direction instrument is a NES supported by a targeted NPS as this is the most effective and efficient option to achieve the policy objectives. This option would effectively address the current absence of RMA provisions on GHG emissions by providing the full range of RMA provisions (objectives, policies, rules, standards) to manage industrial GHG emissions under the RMA. This would support consistent decision-making when the statutory barriers in the RMA to considering the effects of GHG emissions on climate change are repealed on 31 December 2021.

A combination of NES and NPS provisions can also achieve a high level of national consistency and certainty and reduces the need for local authorities to initiate plan changes to regulate industrial GHG emissions. These are both important considerations in the context of climate change and the wider reform of the resource management system.

A key outcome sought from the combination of NES and NPS provisions is to avoid complex case-by-case assessments where applicants can argue the effects of their individual GHG emissions on the ‘environment’ and the climate change are negligible. The intent is that this will be achieved through clear policy direction that recognises that GHG emissions from individual discharges have a cumulative effect on climate change. This effect is regardless of volume of the emissions, and by limiting the discretion of consent authorities so that resource consent can only be granted on certain terms and conditions.

The NES would also specify the maximum consent duration applied to permits (eg, 5-10 years). This signals a transition away from fossil fuels which is assumed to be reflected in investment decisions. It will also enable discharges to be regularly reassessed through a new consent process in the context of technology changes, current best practice, relevant emissions reduction plan, new alternative fuel options and other relevant factors. However, there is a risk that too short a consent duration could reduce investment certainty and deter investment.

Initial feedback from local government stakeholders has generally been supportive of a combined NES and NPS as the most effective way to achieve the policy objectives and to reduce implementation costs and uncertainty for local authorities, applicants and consent holders. The policy options identified below are therefore based on the assumption that these will be delivered through rules and standards in an NES supported by a discrete set of objectives and policies in an NPS.

The efficiency and effectiveness of these options have been further assessed in the draft section 32 evaluation report. Feedback from consultation on the benefits and costs of the

¹¹ There is a general requirement to give effect to a NPS “as soon as practicable” or within the time specified in the NPS. However, past practice has found that councils are variable in meeting the specified timeframes to give effect to a NPS (4Sight, 2017).

policy options will inform a final section 32 evaluation report which is required under the RMA when promulgating a national direction instrument.

Questions – preferred RMA national direction instrument

9. Do you agree that the preferred option (a NES supported by a targeted NPS) will be the most effective way to achieve the policy objectives and to reduce implementation costs and uncertainty for local authorities, applicants and consent holders? If not, why not?
10. Do you agree with the impact analysis of this option?
11. In your view, what is a fair and reasonable duration for consents that would balance the need for investment certainty with the need to improve energy efficiency and reduce emissions over time?

Overview of policy options

This discussion document sets out options for a NES and targeted NPS on industrial GHG emissions in the following areas:

1. Avoiding new fossil fuel discharges in process heat (new assets).¹²
2. Phasing out the use of fossil fuels in process heat (existing assets).
3. Supporting uptake of best available technologies and transitioning to low emissions through GHG emissions plans.

The options are not exclusive; the intent is that a combination of options within each area will work together to achieve the policy objectives. The scope of the policy options is GHG emissions from **the burning of fossil fuels for process heat** and does not extend to other industrial GHG emissions.

All options **regulate the discharge of GHG emissions into air** from industrial and trade premises (rather than the land-use activity) and therefore relate to the functions of regional councils under section 30 of the RMA to control the discharge of contaminants into air. This also means that existing discharges of GHG emissions that are currently permitted will have limited existing use rights under section 20A of the RMA¹³ when resource consent is required under the NES.

A key distinction in the options below is the discharge of GHG emissions from:

- **new industrial assets** – these are assets not yet established prior to the national direction instrument coming into force. This includes replacement assets on existing industrial sites (for example, the replacement of a boiler at the end of its useful operational life).

¹² 'Assets' in this document refers to the fuel burning equipment used to generate process heat. These assets are generally boilers for most low and medium temperature requirements but these fuel burning assets also include ovens, furnaces and kilns depending on the heat requirements.

¹³ Section 20A of the RMA allows for existing permitted activities that require a resource consent under a regional rule to continue for six months provided the effects of the activity are the same in character, intensity and scale and the person carrying out the activity applied for consent within six months.

- **existing industrial assets** – these are assets legally established prior to the national direction instrument coming into force (both consented assets and discharges from assets operating under permitted activity rules).

This discussion document outlines preliminary views on impacts of each option (costs, benefits, likely behavioural changes and risks) and seeks additional evidence from stakeholders on which options are expected to have lesser or larger impacts (relative to each other). Further economic and emissions modelling will also be carried out alongside stakeholder feedback to inform Cabinet policy decisions.

The options all have some common likely impacts. Firstly, the options have the potential to substitute for the emissions price, and this could suppress the price elsewhere in the economy or other sectors, likely reducing abatement in other areas. Some coal to biomass opportunities exist at current emissions prices, however emissions prices in excess of \$60/t CO₂-e, are required to make widespread coal-to-biomass and some coal-to-electricity projects economic. Switching away from natural gas generally starts to become economic only when the emissions price exceeds \$120/t CO₂-e.

Secondly, firms will be affected as a result of the capital expenditure required to replace existing infrastructure, and the increased costs of low emissions energy sources. However the options are designed to ensure that the activity remains viable and compliance costs would not be so large that they could result in industry closures.

Thirdly, the options are likely to have distributional impacts across workers, sectors, regions and rural communities.

- **Changes to skills and employment:** Some skills will be in higher demand while demand for other skills will likely decline.
- **Sectors:** The manufacturing sector, particularly the food and beverage sectors would be impacted through changes around equipment required for the sanitisation of equipment in the food processing sector and drying food products. The mining, gas, biofuels and electricity sectors would all be affected to differing degrees.
- **Regions:** Many coal boilers are located in the South Island, where there is less ability to transition to natural gas and where electricity grid infrastructure may be constrained. Coal mining is also concentrated in the South Island, especially the West Coast.
- **Rural:** The impact of these changes may be felt disproportionately by rural communities over urban communities.

Finally, the options could also bring new opportunities and co-benefits, including the growth of low emissions markets, products and services.

In addition to industrial GHG emissions, this consultation also seeks feedback on how other GHG emissions (direct and indirect) should be considered through RMA plan-making and consenting processes, and whether non-statutory guidance would be useful in this area.

As noted above, broader options for national direction on climate change (mitigation and adaptation) are being considered as part of the wider reform of the resource management system.

1. Avoiding new fossil fuel-fired discharges in process heat

Policy intent

The policy intent of the options identified below is to prevent the discharge of GHG emissions from new fossil fuel-fired assets. The main considerations for these options are:

- whether the policy approach should target particular fuels (for example, coal use for process heat) or take a more ‘fuel-neutral’ approach that focuses on reducing the use of fossil fuels to achieve the lowest amount of GHG emissions
- whether a different approach is required for coal compared to other fossil fuels due to coal being the cheapest and most emission-intensive fuel and the lack of technical alternatives to natural gas for certain industries
- whether an absolute avoidance approach (for example, a prohibited activity rule in a NES) is warranted or whether some degree of flexibility is required to provide certain exemptions and/or to consider site-specific opportunities and constraints through consenting processes.

Preferred options

The preferred options are intended to work together and take a fuel-based approach that applies a more stringent approach for new coal-fired assets (prohibit) compared to other new fossil fuel assets (avoid unless there are no feasible alternatives and specified criteria can be met). A fuel-based approach is preferred because it is administratively efficient, clear to regulators (regional councils) and applicants, and is consistent with existing air discharge rules. It also provides an effective regulatory incentive for industry to avoid new emission intensive assets.

Option 1.1: Prohibiting the discharge of GHG emissions from new coal-fired assets for low and medium temperature process heat requirements through a prohibited activity rule in a NES

Government has already committed to prohibit the installation of any new coal-fired boilers for low and medium temperature process heat. This section provides options for how this ban on coal could be implemented through consenting processes.

This option would avoid the discharge of GHG emissions from new coal-fired assets (ie, boilers or other fuel burning equipment) for low and medium temperature process heat requirements.

Coal is being targeted through the proposed national direction as it is the most emission-intensive fuel. It will be critical to transition away from coal in order to meet our emissions reduction target under the CCRA. The Interim Climate Change Committee (ICCC), the Productivity Commission and the Climate Change Commission have all recommended or proposed high regulatory hurdles on the use of coal in process heat to help achieve New Zealand’s emissions reductions targets.

Despite markets signals and emissions prices, the low cost of coal creates a requirement for a strong regulatory signal to avoid future investment in new coal-fired assets. It is difficult to assess the impact of this policy as new investments in coal-fired boilers are private industry decisions. Several dairy and meat processors which use a large proportion of low and medium temperature heat in New Zealand have announced their commitments to build no additional coal-fired boilers and supported this option in the AREEE discussion document. This policy may have a small impact on future emissions abatement, and therefore impose relatively low costs on industry.

There are also generally viable low-emissions technologies for new plants or expansion that substitute for coal-fired technologies, particularly for low temperatures. For medium-temperature requirements, banning the use of coal for capacity expansion has the potential to impose more significant costs on industry. This will depend whether or not industry is looking to expand its production capacity in the short term, and whether production of lower emissions goods is a viable option (eg, a factory making cheese rather than milk powder).

New medium temperature coal capacity is most likely be South Island milk powder drying facilities, where coal boilers are typically installed. Dairy production growth is slowing, as productivity improvements are offset by declining herd numbers and changing land use. However, there may still be dairy processing investments that compete for the existing milk pool, either by new entrants or from the expansion of existing companies.

Under the RMA, the most effective and efficient way to achieve a ban on the discharge of GHG emissions from new coal-fired assets is through a prohibited activity rule in an NES. A strong 'avoid' policy in an NPS would have similar effect as case law has confirmed that strong avoidance policies will invariably result in prohibited rules.¹⁴ However, this would require councils to initiate plan changes to give effect to the policy and would not capture activities that can be established under permitted activities in the interim period. As such, this approach would potentially result in unnecessary plan change and consent costs to achieve the same outcome.

There would be no specified exemptions or size/emission volume threshold under this option. However, it would be targeted at GHG emissions from the use of coal for process heat and would not apply to domestic coal-burners. Domestic coal burners are partially regulated under the National Environmental Standards for Air Quality 2008.

Table 2: Option 1.1 – pros and cons

Pros	Cons
Provides an administratively efficient and certain approach.	Relatively low costs on industry. There may be some distributional impacts for industries with medium temperature requirements in the South Island seeking to expand production capacity.
No requirement to assess applications on case-by-case basis, reducing risk of debate and litigation through consenting processes.	
Supports New Zealand's emission reduction targets.	
There is a high level of certainty that this will prevent the long-term lock-in of emissions-intensive coal assets.	

¹⁴ *Environmental Defence Society v Otago Regional Council* [2019] NZHC 2278, paragraph 15.

Option 1.2: Policy and rule to avoid discharge of GHG emissions from new fossil fuel assets (excluding coal) for low and medium temperature process heat requirements unless there are no feasible alternatives

This option would provide strong direction that the discharge of GHG emissions from the burning of fossil fuels (excluding coal) for low and medium temperature requirements will be avoided unless it can be demonstrated that there are no other feasible fuel options that result in less emissions (the onus would be on the applicant to demonstrate this). It would apply to the discharge of GHG emissions from the burning of fossil fuels (excluding coal) from new industrial assets over a specified threshold (for example, 50kW, 2 MW or an emission threshold of 100 tonne CO₂-e/year¹⁵). It would involve a restricted discretionary rule in an NES¹⁶ supported by clear policy direction that resource consent must not be granted unless:

- there are no other economically or technically feasible fuel options with less emissions (for example, biomass, electrification); and
- the applicant prepares an emissions plan in line with the best practice requirements outlined in this document, showing how they will minimise GHG emissions.

The NES would also specify the maximum consent duration that can be granted for discharge permits (for example, 5-10 years). This signals a transition away from using fossil fuels for process heat, which will be reflected in investment decisions. It would also allow that discharge to be reassessed through a new resource consent process in the context of technology changes, current best practices, relevant emission budget/reduction plan, new alternative fuel options etc.

Effectively, this option provides a slightly more flexible approach for other fossil fuels (for example, natural gas, diesel, oil) compared to coal while still providing clear direction that the establishment of new fossil fuel assets should be avoided unless there are no feasible alternatives, and that GHG emissions should be minimised.

Fossil fuels other than coal warrant a more flexible approach due to:

- these having a lower emissions intensity than coal
- the lack of technically feasible alternative fuels for certain sectors that currently rely on other fossil fuels
- the potential for significant negative economic and social impacts from prohibiting new other fossil-fired assets
- the likelihood that there will be a decrease in gas use due to the impact of the oil and gas exploration ban imposed in 2018 through amendments to the Crown Minerals Act 1991.

¹⁵ This threshold would apply to each fuel burning equipment/asset on the property not the overall property. The intent is to ensure that small scale discharges of GHG emissions from fossil fuel assets do not unnecessarily require resource consent. Feedback on a suitable threshold is sought in the questions below.

¹⁶ A 'restricted discretionary' activity status means the discretion of consent authorities is restricted to the matters set out in the proposed NES. This would limit discretion of the consent authority to specified matters (for example, alternative fuel options) to help reduce the potential for debate and litigation through consenting processes.

Diesel and LPG are also included in this option (rather than being grouped with coal as a prohibited activity) as most of these operations are relatively small-scale. The price of these fuels also means that it is generally not an economic alternative for larger boiler operations and is unlikely to be seen as a viable fuel switching option for those businesses who need to transition away from coal. Note that fossil fuel assets that operate as back-up or peaking for limited hours (eg, 400 hours per year) would not be subject to the requirements. Thresholds are further discussed in section 3.

There is likely to be challenges for applicants and consent authorities to assess economically and technically feasible fuel alternatives through consenting processes, and the potential for complex economic assessments and information requests. The intention is to provide guidance in this area to assist in making these assessments and it is anticipated that technical input may be required for larger, more complex applications.

It is also difficult to assess the impact of this policy as new investments in fossil-fuel assets are private industry decisions and it is not known whether industry is looking to expand capacity. However it is generally more economic to adopt low emission technologies during the design stage of a new plant (rather than retrofit).

The feasibility of this option is dependent on the availability of alternative economically viable supply markets (biomass and electricity), which (in the case of biomass) may not be sufficiently developed in some areas. If these markets do not mature quickly enough to provide sufficient security of supply for new plants, then majority of new fossil fuel-fired assets will be approved on the basis that there are no feasible alternatives available. However, there also needs to be sufficient demand to develop a strong supply market. There are a number of initiatives underway to help address alternative energy supply and demand issues and these will be considered further as part of the work to develop the HIP sector strategy in New Zealand's first emission reduction plan.

Table 3: Options 1.2 – pros and cons

Pros	Cons
Provides a rule and policy framework to prevent new fossil fuel assets from being established by making the default position that consents should not be granted unless specified criteria are met.	Will result in the introduction of new fossil-fuelled assets, which is contrary to the overarching strategy to reduce emissions and meet emissions budgets.
Emissions will be reduced over time through implementation of best practice requirements.	Councils will be required to assess more complex applications for new fossil-fuel assets, which will require assess feasible alternative fuel options and site-specific measures to reduce emissions.
Provides flexibility for industries with limited alternative fuel options. Consent process and applicant investigation into fuel switching opportunities can be used to inform low emission fuel switching market requirements (an implications for policy and programme initiatives)	Assessments of applications against criteria increase the likelihood that decisions will be challenged and/or permits will be granted for plants where alternative options should have been used. Heavy reliance on biomass and electricity supply markets being sufficient to provide a viable alternative.

Other options considered

The section sets out alternative options to avoid GHG emissions from new emission intensive assets that have been considered but are not the preferred options for the reasons outlined below.

Option 1.3: Prohibited activity rule for discharge of GHG emissions from all new fossil fuel assets for low and medium temperature process heat requirements with specified exemptions

This option would be similar to option 1.1 for new coal-fired assets but would apply to all fossil fuels and would include a list of specified exemptions from the prohibited activity rule. These exemptions would be limited to critical industries and applications (for example, emergency response activities) to help avoid the potential for unintended negative consequences of prohibiting new fossil fuel assets in all circumstances. The exemptions could also be geographically based to recognise the limited alternative fuel options in certain locations. For example, in some regions where there is limited access to biomass, stringent controls on particulate matter discharge in some polluted air sheds, and no access to natural gas.

As outlined in the table below, the key challenge problem for this option is identifying and defining suitable exemptions to avoid potential loopholes and unintended consequences. This is likely to increase the chance of litigation by providing exemptions. This option is not preferred as a key objective of the national direction instrument is to decrease the likelihood of local government having to engage in litigation with applicants.

Table 4: Option 1.3 – pros and cons

Pros	Cons
Likely to reduce the chance of unintended impacts on industry as consultation can identify circumstances where exemptions to a prohibited activity rule are justified and can be clearly defined.	More complex to identify appropriate exemptions and define these in a way that avoids loopholes/unintended consequences.
Has the potential to recognise specific regional circumstances where exemptions to a prohibited activity rule are justified and can be clearly defined.	More complex assessment and decision making required as councils will be required to consider exemptions.
Still effective at reducing emissions – will prevent the long-term lock-in of emissions-intensive assets with very limited exemptions to help achieve NZ’s emissions reduction targets.	Increased chance of litigation and loopholes by providing exemptions. Geographic exemptions could create perverse incentives (for example, industries establishing where coal is not prohibited as this is a cheaper fuel source).

Option 1.4: Avoiding discharges of GHG emissions new fossil fuel assets above a emission volume threshold for particular sites

An alternative approach to avoiding new emission intensive assets is to take a more ‘fuel neutral’ approach that is based on emission volume of GHG emissions from the operation rather than the source of fuel. This would require suitable thresholds of emission volume to be developed which would then determine the emissions limits in the discharge permit.

As outlined in the table below, a challenge created by this option is defining a suitable threshold for a particular site and what that threshold should be based on (for example, total volume of emissions over a defined time period, maximum potential emissions from the equipment, the actual site and fuel type). There would need to be a high level of confidence that this threshold was set at an appropriate level above which the effects of the GHG emissions are unacceptable for the particular site. The threshold would be defined

as a result of the resource consent process, based on expected use of the emitting assets for the site, the availability of low-emission technologies, and the optimisation of the design.

This option would require regular reviews to ensure the suitability of the threshold. There is also a risk that boilers would be designed in a way to fall below the threshold, which would create less certainty.

Table 5: Option 1.4 – pros and cons

Pros	Cons
The fuel neutral approach focuses on minimising emissions based on the volume of the emissions and a threshold that is targeted to the particular site rather than fuel type.	Will require expertise to determine what is a suitable threshold for a particular site taking into account a range of factors.
The approach focused is future proof and allows for greater flexibility on how to comply with the threshold.	Risk that boilers are designed to fall just below threshold. Will require regular updates of the general guidance to accommodate the most commonly encountered situations.

The draft section 32 evaluation report also provides a preliminary assessment of the efficiency and effectiveness of these options. Feedback from consultation on the benefits and costs of the policy options will inform a final section 32 evaluation report which is required when promulgating a national direction instrument under the RMA.

Questions – Preventing discharge of GHG emissions from new fossil fuel assets

12. Should the ban on new coal-fired assets for low and medium temperature requirements be implemented through a prohibited activity rule in national direction? Should there be any exemptions for small-scale coal-fired assets (for example, below 50kw, 2 MW or 100 tonne/year) or flexibility to consider site specific constraints through consenting processes?
13. Do you agree with the approach to avoid new fossil fuel assets (excluding coal) unless it can be demonstrated there are no feasible alternatives, and where the applicant prepares a GHG emission plan, and complies with relevant best practices? Are there more effective and efficient ways to achieve this outcome?
14. How can national direction and guidance best assist applicants and consent authorities to assess economically and technically feasible alternative fuel options?
15. Should the policy approach for new process heat assets target specific fossil-fuel sources or should it take a fuel neutral approach? In your view, what is the best approach to define thresholds and requirements?
16. Referring to each option, what are the likely compliance costs and impacts on your firm? Who are the small to medium size industry users that could struggle to meet the requirements?
17. What supporting initiatives are needed to transition away from fossil fuels in new industrial sites?
18. Is there anything that you feel has been overlooked in this section with regards to the reality of your businesses' industrial practices? Or for local government: is there anything that you feel has been overlooked in this section with regards to the reality of consenting practices?

2. Phasing out fossil fuels and reducing emissions from existing industrial sites

Policy intent

There has been extensive work demonstrating the need to phase out the use of fossil fuels in process heat in order to meet New Zealand's emission reduction targets. The current regulatory regime under the RMA for the discharge of GHG emissions from the burning of fossil fuels is not equipped to support or incentivise this transition. Existing air discharge rules are designed to manage other effects (i.e., air quality), and some regional plan rules enable significant discharges of GHG emissions from the burning of fossil fuels to occur as a permitted activity. Further, air discharge permits associated with the burning of fossil fuels are often granted for long periods (20-35 years), effectively 'locking-in' these emissions well into the future (and beyond 2050 in some cases).¹⁷

The policy intent of these options is to accelerate the phase out of fossil fuels in process heat and support the transition to lower emission fuels such as electricity and biomass. This would be achieved through strong policy direction to phase out fossil fuels in process heat and nationally consistent rules in an NES that prevent (or reduce) the discharge of GHG emissions from the burning of fossil fuels at existing industrial sites after a specified 'phase-out' date. This would apply to both consented industrial sites and existing industrial sites operating under permitted activity rules.

For consented sites, requirements could apply when their existing discharge permit expires (i.e., through re consenting processes,¹⁸ as per option 2.1). There is also an option to review existing discharge permits under section 128 of the RMA (as per option 2.3). This process enables regional councils to impose conditions requiring a consent holder to adopt the 'best practicable option' or other conditions to help reduce GHG emissions in advance of the discharge permit expiring. However, as discussed further below, there are limitations on the conditions that can be imposed through a review of consent conditions while ensuring the activity remains viable, and the review process creates uncertainty and costs for consent holders and regional councils. This option would therefore need to be targeted at larger emitters with longer term discharge permits.

The main considerations for options to phase out the use of fossil fuels in process heat through national direction are:

- whether the approach should target particular fuels (for example, coal-fired boilers) or take a more 'fuel-neutral' approach that focuses on reducing the use of fossil fuels to achieve the lowest amount of GHG emissions
- the appropriate 'phase-out' date and whether there needs to be flexibility to review the feasibility of the date based on the sufficiency of low emissions fuel markets

¹⁷ For example, a review of 45 air discharge permits found that 27 have an expiry date of 2030 or later, 12 have an expiry date of 2040 or later, and four have an expiry date after 2050 (with a mean expiry date of 2034). Examples of emission intensive discharges with long-term permits in the sample include the discharge of contaminants into air from three coal-fired boilers (50 MW total) authorised until 2042 and the discharge of contaminants into air from four coal and oil boilers (140 MW total) authorised until 2045.

¹⁸ This is effectively a new resource consent process although consent authorities are required to have regard to value of the investment of the existing consent holder when considering the new consent application.

- how to address GHG emissions from existing industrial sites with long-term consent durations (ie, through re-consenting processes when consent expires or through review of consent conditions)
- transitional arrangements and incentives for industry to fuel switch.

Preferred options

As with the policy options for new fossil fuel assets, the preferred options below take a fuel-based approach and set a clear “phase out” date for the use of coal in low and medium temperature process heat (2037) while also providing strong regulatory incentives to phase out the use of other fossil fuels in existing industrial sites over time. A fuel-based approach is preferred because it is administratively efficient, clear to regulators (regional councils) and applicants, and provides clear signal to industry to phase out the use of fossil fuels for process heat in line with New Zealand’s emissions reduction targets.

Option 2.1: Phase out coal in existing sites by 2037 for low and medium temperature process heat requirements through re-consenting processes

This option would seek to phase out the use of coal for process heat at existing industrial sites by 2037 for low to medium end use temperature requirements through rules in the NES. The NES rules would not allow for discharge permits to be granted or re-consented. This would be achieved through rules in an NES that prohibit discharges of GHG from coal-fired assets past 2037.

The 2037 timeframe would provide a minimum lead in time of around sixteen years for existing coal users to make this transition, which will help minimise economic impacts and aligns with the second emission budget in the CCRA. However, the actual timing and application of the ‘phase out’ requirements in the national direction instrument would vary for existing industrial sites depending on the RMA authorisations they hold:

- **Existing discharges of GHG emissions from coal-fired assets currently permitted** – these would require a consent under the NES and be subject to the GHG emissions plan. These existing permitted discharges would then have limited existing use rights under section 20A of the RMA, which would enable the activity to continue provided a resource consent application is applied for within six months of the NES coming into force. The NES would only allow permits to be granted with a maximum permit duration of up to 2037 (or shorter where practicable) and the discharge could not be re-consented past this date.
- **Consented discharges that expire prior to 2037¹⁹** – consent holders would be able to continue to discharge GHG emissions from their existing site until their consent expires. At this point they could apply for a short-term consent under the NES (including a requirement to prepare a GHG emissions plan) which could be granted for up to 2037 (or shorter where practicable). This timeframe may enable the firm to transition away from coal and help provide a more equitable approach by not unduly penalising consent holders with permits that expire before 2037. Alternatively, the consent holder may

¹⁹ It is not clear the exact number of permits fall into this category as the number of industrial sites with existing discharge permits that expire prior to 2037 are highly variable between and within regions. Data on existing discharge permits provided by three regional councils indicated that the portion of air discharge permits that expire beyond 2037 range from approximately 23 per cent to approximately 49 per cent. All regions had examples of air discharge permits that authorise the burning of fossil fuels with long-term durations (expiry dates of between 2041-2050).

choose to fuel switch immediately when their consent expires as part of a longer-term investment to transition away from coal.

- **Consented discharges that expire after 2037** – consent holders would be able to continue to discharge GHG emissions until their discharge permit expires, at which point the NES rules would not allow that discharge to be re-consented. For some existing coal-fired sites, this means they would be able to continue to discharge GHG emissions from the burning of coal well into the future (and beyond 2050 in some instances), although these longer term permits maybe subject to a consent review in advance of this date, see option 2.3 below.

To manage the impacts on existing discharges of GHG emissions that are currently permitted and consented discharges with imminent expiry dates, there could be a lead-in time before compliance with the NES is required (for example, 12-18 months) to provide more time to prepare their application and GHG emissions plan. Small-scale coal-fired assets (for example, 50kW, 2 MW or 100 tonne CO₂-e/year) could also be exempt from the phase out requirements to avoid unnecessary consent requirements and obligations.

The compliance costs of this proposal would be different across process heat users depending on the emissions price, temperature requirement, age of equipment, access to capital and profitability, and location and access to alternative fuels including transmission and distribution capacity. Industries using coal for medium temperature heat requirements in the South Island are likely to be disproportionately affected. Therefore, because of the uncertain and risk of significant impacts, it is proposed to have a review clause for coal, as outlined below.

National direction review clause for coal

As noted above, the feasibility of coal users switching to lower emission fuels (for example, biomass and electricity) is reliant on these markets having sufficient capacity to meet demand. There are a number of initiatives underway to help address energy supply and demand issues and these will be considered further as part of the HIP sector strategy in the emissions reduction plan. National direction could potentially include a review clause to confirm the 2037 phase out date is feasible (for example, reviewed in 2025) based on a better understanding of future energy supply markets.

Table 6: Option 2.1 – pros and cons

Pros	Cons
Provides certainty that the use of coal will be phased out to support New Zealand’s emissions reduction targets.	Potential to result in substantial increase in consent requirements and associated costs for smaller coal-fired assets currently operating under permitted activity rules.
A phase out date gives industry a clear milestone to plan for their transition to lower emission fuels.	There is a risk that the biomass markets will not generate sufficient supply in all regions prior to 2037 which could impact on the viability of fuel switching for certain industrial operations.
The eight-year lead in time will minimise economic impacts and avoid the need for steeper reductions in the future.	Electricity is likely to remain an expensive option for those industries that require grid upgrades or for those with medium temperature requirements. South Island industries with medium temperature requirements could be disproportionately affected.

Pros	Cons
This timeframe out to 2037 will support the projected emissions price trajectory.	Not all industries may be able to find an economic and technologically viable alternative fuel source, or secure capital to make the required plant and equipment changes, which has the potential to result in some business closure.
Provides a consent pathway for renewing consents prior to the phase out date to give industries operational certainty during the transitional period.	Consent holders will be unaffected by the NES provisions until their consents expire, meaning some sites will not be affected until after 2050. This will result in an uneven playing field between competing industries.
Overcome potential perverse incentives associated with option 2.1 – whereby existing coal boilers are refurbished and maintained for decades to avoid triggering the definition of “new coal”.	Encouraging fuel to biomass may have other adverse effects – for example, an increase in particulate matter and associated air quality impacts, increase in transport effects

Option 2.2: Phase out other fossil fuels in existing sites through re-consenting processes and best practice requirements in a NES

While phasing out the use of coal in process heat is the priority, the use of natural gas and other fossil fuels also needs to decline significantly to meet the 2050 target. However, a strong ‘phase-out’ date for natural gas, LPG and diesel could have significant impacts and make some operations unviable due to the lack of alternative fuel options. The managing down of natural gas usage will become important as we start to see a reduction in natural gas availability and flexibility over the medium to long-term, as we see the effects of New Zealand’s prohibition on new petroleum exploration begin to materialise. This is likely to result in a decline in the availability of natural gas and, as this occurs, natural gas usage will see increased competition for consumption.

This option would therefore provide some flexibility for existing fossil fuel-fired industrial sites (excluding coal) to continue to use fossil fuels through re-consenting processes, provided specified criteria can be met. This option is also broader in that it covers energy use and energy emissions from all industrial sites over a size threshold, including those with high temperature requirements. This option would involve rules and standards in a NES that require applicants to:

1. demonstrate that there are no other technically and economically viable alternative fuel options with less emissions; and
2. prepare a GHG emissions plan that meets best practice requirements, showing how they will minimise GHG emissions, adopt best practices and transition over time.

National direction review clause for other fossil fuels (including natural gas)

National direction could also include a review clause (for example, five years after it comes into force in 2025) to reconsider the approach to phasing out natural gas (and other fossil fuels). This review would identify and monitor any perverse outcomes (for example, industries switching from coal to natural gas) and determine whether natural gas is being sufficiently phased out to meet the 2050 target, based on a better understanding of future energy supply markets. A firmer phase out date for natural gas could then be provided through national direction if the desired reductions in natural gas were not being achieved.

Table 7: Option 2.2 – pros and cons

Pros	Cons
Will help to phase out fossil fuels in process heat through creating clear consent requirements and best practice requirements.	Will not phase out the use of fossil fuels in some existing sites for many years with the risk of stranded assets.
Provides an incentive for industry to identify and assess low emissions options, and prepare for transition while managing short-term economic and social impacts.	Risk that industry can easily argue that there are no technically and economically feasible alternatives to natural gas, LPG or diesel, limiting the effectiveness of the option to reduce emissions.
Ensures the policy approach for phasing out fossil fuels places the most stringent requirements on the most emissions-intensive fuel (coal).	Costs to industry and councils to assess (and reassess) applications to ensure the specified criteria are met.
	Regulatory uncertainty for industry through consenting (and re-consenting) processes.

Option 2.3: Require regional councils to review consent conditions for significant GHG emitters with long-term permits

Options 2.1 and 2.2 above seek to phase out fossil fuels through consenting processes – i.e., applying more stringent requirements for existing industrial sites when they apply for a new air discharge permit once their existing permit expires. This recognises that consent holders have a legitimate expectation that their activity can continue in accordance with the terms and conditions of their discharge permit. However, this would mean some significant emitters with long-term permits would be able to continue discharging GHG emissions well into the future (beyond 2050 in some cases) without being subjected to any requirements in national direction to reduce emissions.²⁰

To address this issue, this option would involve a requirement in a NES for regional councils to review discharge permits above certain thresholds with a specified timeframe which NES are empowered to do under section 43A(1)(f) of the RMA. This requirement would be targeted at larger emitters (operating capacity of 20 MW or above or GHG emissions of 5,000 tonne CO₂-e/year) with longer permits (expiry date of 2035 or longer) and regional councils would be required to review these consents by 2025.

Section 128(1)(a)(ii) of the RMA enables a review of consent conditions to be undertaken for the purpose of requiring a consent holder to adopt the ‘best practicable option’ to remove or reduce any adverse effect on the environment. The purpose of the review would therefore be to require existing industrial sites to prepare a GHG emissions plan to demonstrate how they will transition over time and to adopt best practices to reduce their emissions. This would

²⁰ In a 4Sight Consulting Ltd report commissioned by MfE in 2020, a review of air discharge permits indicated that many emission intensive discharges, particularly the burning of fossil fuels, are authorised to discharge GHG emissions well into the future. Of the 45 air discharge permits reviewed, 27 have an expiry date of 2030 or later, 12 have an expiry date of 2040 or later, and four have an expiry date after 2050. Examples of long-term emission intensive discharge permits include a discharge from three coal-fired boilers (50 MW total) authorised to discharge contaminants into air until 2042 and four coal and oil boilers (140 MW total) authorised to discharge contaminants into air until 2045. These consent holders have a legitimate expectation that they will be able to continue to operate under the terms of their consent for the next 10-30 years without altering their operating procedures or changing technology or fuels.

provide a means to ensure larger emitters take practical steps to reduce their GHG emissions (for example, through process improvements to increase energy efficiency) while ensuring that the consent remains viable.

The consent review process imposes costs on councils and industry and creates the potential for regulatory uncertainty and litigation. Therefore, any requirement within a NES that requires regional councils to review existing discharge permits to impose GHG emissions plan requirements needs to be carefully considered to ensure the benefits outweigh the compliance costs. This balance is proposed to be achieved through limiting consent review requirement to significant emitters with longer-term consents based on the proposed thresholds above where there is potential to materially reduce emissions through energy efficiency improvements or fuel switching.

Table 8: Option 2.3 – pros and cons

Pros	Cons
Potential to achieve emissions reductions from significant GHG emitters with long term consents that would otherwise be unaffected by national direction in the short to medium term.	Unclear whether GHG emissions plan and best practice requirements will achieve material reductions in emissions that outweigh corresponding compliance costs.
Only reviewing the consents of significant GHG emitters helps to reduce workload and costs for councils.	Imposes compliance costs for council and industry (although this would be limited to significant emitters).
The GHG emissions plan requirement provides some flexibility to consider site-specific factors and constraints and to allow for a transition to ensure the operation remains viable.	May be easy for applicants to argue that best practice requirements are not economically or technically feasible to avoid making any changes.
The NZ-specific best practices will provide a level of certainty to industry and councils on the types of technologies and practices that may be imposed as consent conditions.	Additional cost of upskilling consent staff to understand GHG emissions plans and best practices and/or engaging additional technical expertise.
Will support New Zealand’s industrial sector to become a world leader in energy and GHG emissions efficiency.	

Other options considered

Option 2.4: Specify a date for prohibiting new and phasing out other fossil fuels for low and medium temperature process heat requirements through re-consenting processes

Rather than having a review clause for other fossil fuels (including natural gas), there is an option for the national direction to specify dates for prohibiting other new fossil fuel assets and phasing out them. It is not proposed at this time because there is still likely to be a role for natural gas in manufacturing (particularly in highly integrated sectors) in the medium to long term. In addition, other fossil fuel assets sometimes play an important role for back-up or peaking services, but overall do not emit significant quantities of GHG emissions.

For some manufacturers who use natural gas, no economic alternatives exist in New Zealand. Switching away from natural gas generally starts to become economic only when the emissions price exceeds \$120/t CO₂-e. Depending on the timeframe (and the emissions price over time), a phase out of gas is likely to impose high costs on some industries and could force much higher abatement costs compared to more cost-effective options in industry and the wider economy. Therefore, it is likely that a longer lead in time for a phase out of natural gas is appropriate for the development of technical alternatives.

Option 2.5: Phase out coal in existing sites by 2037 only for low temperature process heat requirements through re-consenting processes

Another option is to phase out coal in existing sites by 2037 for low temperature process heat requirements only (rather than for medium temperatures as well). It is acknowledged that phasing out medium temperature requirements could be more challenging than low temperatures, as it will in most cases require a secure and cost-effective source of biomass, and electrification could be a costly option. However, this option is not preferred as targeting abatement opportunities from medium temperatures is a significant area for emission reduction, and signalling a lead-in time will encourage the further development of the biomass industry and electricity infrastructure upgrades. In addition, for sites with both low and medium temperature requirements, it is sometimes counterproductive or inefficient to supply low temperature heat from a low emissions source where waste heat recovery²¹ is in place. Addressing both temperature requirements at the same could reduce the risk that investments for low temperatures only could lead to stranded assets when investments to address medium temperatures are needed.

The draft section 32 evaluation report also provides a preliminary assessment of the efficiency and effectiveness of these options. Feedback from consultation on the benefits and costs of the policy options will inform a final section 32 evaluation report which is required when promulgating a national direction instrument under the RMA.

Questions – Phasing out fossil fuels in process heat

19. Is 2037 an appropriate 'phase-out' date for low and medium temperature coal process heat requirements? Is it necessary to include a review date within the national direction instrument (potentially around 2025) to assess the development of alternative fuel markets closer to the phase out date?
20. Should there be a longer lead-in time for existing coal-fired assets that are currently permitted before these are subject to the NES consent requirements?
21. Is it appropriate to phase out other (non-coal) fossil fuels in existing industrial assets through consenting processes and best practice requirements?
22. Is a more flexible approach for the re-consenting of other (non-coal) fossil fuel-fired assets warranted/needed?
23. Should there be a set phase-out date for other (non-coal) fossil fuels, including natural gas? What are the potential benefits and risks?
24. Should the NES require regional councils to review consent conditions of significant GHG emitters with long-term permits to help reduce emissions? What are the benefits and risks?
25. What are the appropriate size (operating capacity and/or volume of emissions) and/or consent duration thresholds to trigger a review of existing discharge permits? What is a realistic and achievable timeframe for regional councils to undertake a review of the discharge permits for large emitters in their region?
26. Referring to each option, what are the likely compliance costs and impacts on your firm? Who are the small-to-medium size industry users that could struggle to meet the requirements?
27. Is there anything that has been overlooked in this section with regards to the reality of business practices? For local government: is there anything that you feel has been overlooked in this section with regards to the reality of consenting practices?

²¹ Waste heat is defined as an energy coming from a flow that will be released in the environment anyway, such as hot air from a dryer, flue gas from the stack condenser, or waste water.

3. Supporting uptake of best practices and transitioning to low emissions through GHG emissions plans

Policy intent

It is common practice under the RMA to require applicants (industry or other) to adopt best practice or the ‘best practicable option’²² to avoid or mitigate adverse effects on the environment, taking into account what is technically and financially feasible for a particular activity. It is also common practice under the RMA to impose management plan requirements requiring consent holders to proactively identify and manage site-specific adverse environmental effects. A similar approach is proposed within this national direction for industrial GHG emissions. This reflects that there are well-established technologies and practices that industry can adopt to reduce their GHG emissions through improving energy efficiency and fuel switching, but that there is no “one size fits all” approach due to the bespoke nature of many industrial processes.

Encouraging industry to better account for, manage and reduce their GHG emissions is critical to meeting New Zealand’s 2050 target. Some industries and businesses are already preparing energy transition plans or low carbon roadmaps (or similar) as a way of helping to manage and reduce their emissions, but this practice is variable and lacks transparency and accountability.

The policy intent of this option is to encourage industry to accelerate energy efficiency improvements, adopt best practices and proactively plan for transitioning to low carbon technology over time, through the preparation and implementation of a ‘greenhouse gas emissions plan’ specific to their site.

The main considerations for imposing GHG emissions plan and best practice requirements through national direction are:

- the information required in the GHG emissions plan and whether this should be provided through a NES schedule or non-statutory guidance
- the thresholds that would trigger the preparation of a GHG emissions plan and different requirements based on the size of the site and whether it is new or existing
- the role of regional councils in receiving, reviewing and assessing GHG management plans
- the level of discretion to adopt best practices where ‘technically and economically feasible’ (and how to assess what is feasible for a particular operation)
- technical support to assess compliance with best practice requirements
- monitoring, review and reporting requirements.

²² Best practicable option is defined in the RMA in relation to the discharge of a contaminant as “means the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to— (a) the nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects; and (b) the financial implications, and the effects on the environment, of that option when compared with other options; and (c) the current state of technical knowledge and the likelihood that the option can be successfully applied”.

Preferred option

Option 3.1: Require industrial sites (above a certain threshold) to prepare and implement a GHG emissions plan to encourage energy efficiency and the uptake of best practices, and transition fossil fuel assets to low emissions energy sources over time

This option would require industry to submit a GHG emissions plan as part of a resource consent application – both for new assets and existing assets through re-consenting processes. It is intended to work in combination with options 1.2, 2.2 and 2.3 described above that apply to new and existing fossil fuel assets. The purpose of the GHG emissions plan would be to demonstrate how the site currently minimises and/or will reduce GHG emissions over time through improving their energy use and adopting relevant best practices. Where the GHG emissions plan identifies that the best practices or low emissions option is not technically and economically feasible, the onus would be on the applicant to provide supporting evidence to demonstrate this through the consent process.

Best practices include Best Available Technology (BAT) documents, NZ Publicly Available Specifications (PAS)²³ and other standards of reference or guidance developed by the Energy Efficiency and Conservation Authority (EECA). An initial set of best practice materials is provided in Appendix Two. BAT is a concept used internationally²⁴ and is defined as the most effective technique for preventing or reducing emissions that are technically feasible and economically viable within a particular sector. BAT creates a level playing field for industry, aligning environmental performance requirements for industrial installations. BATs are likely to foster enhanced resource efficiency and an upgrade of industry.

The relevant best practice guidance will be provided by EECA, building on work already being undertaken nationally and internationally. This guidance will support the requirements within national direction and help both regulators (regional councils) and applicants (industry) understand and assess feasible measures to reduce GHG emissions for different industrial sectors. Guidance or methods to determine technical and economic feasibility will also be developed by EECA, in partnership with policy agencies. Indicators such as the marginal abatement cost, levelised cost of energy, shadow pricing, and the depreciation of assets could be used.

National direction would set out specific requirements for the content of the GHG emissions plans (for example, as a schedule in the NES). To help industry prepare their site-specific GHG emissions plans, guidance and templates would be developed and potentially referred to as matters of discretion, along with a link to the relevant section on EECA's website where the materials would be listed. This would help streamline the process to prepare GHG emissions plans, reduce compliance costs for industry and deliver the desired outcomes in terms of GHG emission reductions.

²³ Publicly available specification (PAS): Voluntary documents developed by Standards New Zealand. It defines good practice for a product, service or process.

²⁴ The European Union's Industrial Emissions Directive defines BAT as "the most effective and advanced stage in the development of activities and their methods of operation, indicating the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where this is not practicable, to reduce emissions and the impact on the environment as a whole".

The GHG emissions plan would outline site-specific objectives, as well as the measures to meet those objectives to be implemented over time. The expectation is that the measures and objectives in the GHG emissions plan would be incorporated into consent conditions through the consent process, including review conditions under section 128 which would allow for progress and milestones in the plan to be monitored. Regional councils would be responsible for monitoring compliance with the GHG emissions plan and undertaking enforcement if deemed necessary.

There would be different compliance pathways depending on the size of the activity, the specific industry and whether it was a new or existing site. The proposed thresholds are as follows:

- The requirements would not apply to low-GHG emitting sites (a specified threshold below 100 tonne CO₂-e/year, 50kW, 2 MW, or those operating fewer than 400 hours per year), for example, small commercial space heating and food processing sites, boilers used for back-up or peaking²⁵
- Small sites are those emitting between 100 and 2,000 tonne CO₂-e/year (for example, horticulture, smaller food processing sites)
- Large sites are those able to emit over 2,000 tonne CO₂-e/year (large food processing sites, emissions-intensive industry).

There could also be a requirement for large sites to have their plans reviewed/certified by a suitably qualified expert to ensure the plan is robust from both a process and technology perspective.

The proposed requirements for GHG emissions plans are set out in the table below. Appendix One further outlines the proposed requirements and content of a GHG emissions plan for small and large sites. Appendix Two provides examples of supporting best practice guidance/BAT.

Table 9: Proposed thresholds and requirements for GHG emissions plan

	Energy technology choice (common applications)	Facility-wide energy management practices	Industry-specific applications
Existing sites – small (councils can rely on the guidance)	Asset transition plan to a low-carbon option (what & when) – as per Schedule A (Appendix One)	<i>Not required</i>	<i>Not required</i>
Existing – large (expert input and review required by a suitably qualified expert)	Asset transition plan to a low-carbon option (what & when) – as per Schedule B (Appendix One)	Energy management practices in place and energy efficiency options implemented – as per Schedule B (Appendix One)	BAT provided on EECA’s website (Appendix Two) (for example, drying, sterilisation...) – or explain why not practicable with supporting evidence
New – Small (councils can rely on the guidance)	Installation of low-carbon option – or explain why a fossil-fuel option is unavoidable with supporting evidence – as per Schedule A (Appendix One)	<i>Not required</i>	<i>Not required</i>

²⁵ Other policy measures will support decarbonisation in commercial space heating (for example, the Building for Climate Change work programme).

	Energy technology choice (common applications)	Facility-wide energy management practices	Industry-specific applications
New – Large <i>(expert input and review required by a suitably qualified expert)</i>	Installation of a low-carbon option – or explain why a fossil-fuel option is unavoidable with supporting evidence – as per Schedule B (Appendix One)	Energy management practices in place and energy efficiency options implemented – as per Schedule A (Appendix One)	Energy efficient plant design, standards of reference adopted as provided on EECA’s website (Appendix Two) – or explain why not practicable with supporting evidence

Table 10: Option 3.1 – pros and cons

Pros	Cons
GHG emissions plans are tailored to the size of the site and whether it is new or existing, which helps to ensure requirements are fit-for-purpose and assist with managing compliance costs.	Compliance costs for industry to prepare GHG emission plans.
Will ensure all existing and new industrial sites/equipment prepare GHG emissions plans to transition to best practice over time, which will provide a more level playing field based on industry best practice.	Additional cost of upskilling consent staff to understand best practice requirements.
The development of NZ-specific best practices will provide a level of certainty for both applicants and councils as to the standards that need to be met through consenting processes.	The imposition of best practice requirements may achieve limited reductions in GHG emissions where plants are already operating in accordance with best practice.
The flexibility to consider what are technically and economically feasible best practice requirements at the site/equipment level will help to avoid onerous requirements and potential plant closures.	Costs for industry to implement best practice requirements (potentially offset to some degree with improvements in energy efficiency).
Incentivises industry to actively plan for the transition.	

Other options considered

Other options considered are variations of the specific/detailed requirements of GHG emissions plans including:

- Requiring implementation of ‘best practicable options’ without any specific guidance that would assist industry in determining or assessing what best practices are. This option is not preferred as it would create a high degree of uncertainty for consenting authorities in how to determine whether the site was operating at best practice. There would also be a higher risk of inconsistent decision-making across councils.
- Requiring industry to *consider* rather than *adopt* best practices. This option is not preferred as it could risk resulting in a mere procedural requirement (“box ticking exercise”), with a less determinate impacts on emission reductions than the preferred approach of requiring adoption of best practice where practicable.
- Requiring industry to prepare a GHG emissions plan but not include the objectives and measures for implementation in consent conditions. As above, there is a risk the plan would be merely a document that is ‘left on the shelf’ rather than an organisational plan for tangible emission reduction projects.

- Requiring industry to use and be certified to a third party standard, such as ISO 50001, as well as meeting other requirements in the preparation of GHG emissions plans (as set out in Schedules within the NES). The compliance cost of meeting and being certified to an international standard is deemed to be overly burdensome given that there are additional requirements in the proposal around transition planning.
- Incorporate specific materials into an additional Schedule of the NES rather than listed on EECA's website. This is not preferred as it "locks in" static documentation at a point in time, and the process of amending schedules by Order in Council is likely overly burdensome.

The draft section 32 evaluation report also provides a preliminary assessment of the efficiency and effectiveness of these options. Feedback from consultation on the benefits and costs of the policy options will inform a final section 32 evaluation report which is required when promulgating a national direction instrument under the RMA.

Questions – GHG emissions and best practice requirements

28. Do you agree with the proposed thresholds for small sites being between 100 and 2,000 tonne CO₂-e/year and large sites, being over 2,000 tonne CO₂-e/year, in the preparation of a GHG emissions plan?
29. Do you agree with the proposed requirement that GHG emissions plans for large sites be reviewed/certified by a 'suitably qualified expert'? Should this be limited to larger sites?
30. What guidance and templates would be useful to help industry and councils prepare and review GHG management plans?
31. How should best practice requirements be incorporated into national direction? What factors should councils consider when determining what is economically and technically feasible at the site-level?
32. For large boilers and combustion plants, should an emission limit value be included in the consent conditions, based on the specific application outlined in the GHG emissions plan (fuel use x emission factor), as occurs in Europe and the US?
33. Referring to each specific schedule, do you agree with the content of the GHG emissions plans for small (Schedule 1) and large (Schedule 2) sites?
34. In your view, are the materials referenced in Appendix Two appropriate for each sector and across sectors?
35. Is there anything that has been overlooked in this section with regards to the reality of business practices? For local government: is there anything that you feel has been overlooked in this section with regards to the reality of consenting practices?

4 Non-industrial emissions

Policy intent

From 1 January 2022, local authorities will be able to consider the effects of both direct and indirect GHG emissions on climate change when assessing resource consent applications and plan change requests. The amendments do not impose an active obligation on consent authorities to consider GHG emissions, but consent authorities are required to have regard to “any actual and potential effects on the environment of allowing the activity” under section 104(1)(a) of the RMA. Consent authorities also:

- **must** have regard to any measure proposed by an applicant to offset adverse effects from allowing the activity (for example, afforestation to offset GHG emissions)
- **must** have regard to relevant provisions in an NES or NPS
- **may** disregard the effects of an activity permitted under the relevant plan (for example, burning of coal below a permitted activity threshold).

Local authorities must also “have regard to” emissions reduction plans prepared under CCRA when preparing regional policy statements, regional plans and district plans.

The removal of the statutory barriers to the consideration of the effects of GHG emissions on climate change therefore present some potential challenges and implementation issues for RMA planning and consenting processes. The central issue for RMA consenting and planning processes is how to effectively and efficiently assess the cumulative effects of GHG emissions on climate change. Key issues include:

- to what extent should the cumulative contribution of individual GHG emissions to national and global emissions and associated climate change effects be considered
- whether the GHG emission impacts of individual projects (for example, linear transport infrastructure) can or should be quantified, and whether ongoing emissions associated with a project should be considered
- at what point could, or should, the effects of individual GHG emissions on climate change be disregarded (or permitted) on the basis that these are de minimis.

Other potential issues include:

- how emissions reduction targets and plans prepared under the CCRA should be considered in consent decision-making (i.e., as an “other relevant matter” under section 104(1)(c) or through a more directive requirement) and how to “have regard to” emissions reductions plan when preparing plans and policy statements
- the ability of consent authorities to consider effects outside their region, i.e., the global effects of climate change
- the obligation on consent authorities to consider proposals by applicants to offset their GHG emissions (for example, an afforestation programme or carbon capture storage)
- the extent to which the ‘permitted baseline’ should be considered when assessing applications with GHG emissions.

Stakeholders have identified the need to provide some form of guidance or policy direction on how to consider wider GHG emissions (direct and indirect) through RMA planning and consenting processes and the benefits associated with giving local authorities direction in this area. This could take the form of non-statutory guidance, general policy direction in an NPS, or

both. It is contrary to the policy objectives of this instrument to have local government making ad hoc decisions that complicate work underway in other sectors, for example, in agriculture, where the Government and the sector have established He Waka Eke Noa.

The preferred option outlined below should be considered as an 'interim measure' while the comprehensive reform of the resource management system takes place as this will consider broader options for how the resource management system can facilitate reductions in GHG emissions (direct and indirect).

As outlined in Section 1, there is also policy work underway to strengthen the National Policy Statement for Renewable Electricity Generation 2011 (NPS-REG), and to develop policy related to the Government's manifesto commitment to implement a ban on new thermal electricity generation by restoring Part 6A of the Electricity Act 1992.

Preferred option

Option 5.1: Guidance on assessing GHG emissions (direct and indirect) through planning and consenting processes

This option would involve the development of non-statutory guidance on how to assess resource consent and plan change applications involving GHG emissions (direct and indirect) under the RMA. This would assist local authorities to consider GHG emissions when making decisions from 31 December 2021. The matters covered in this guidance are likely to be addressed through the proposed new resource management legislation, so this guidance would act as interim direction until that legislation is enacted.

Guidance would give councils direction on how to treat non-industrial emissions in planning and consenting. This could guide decision-making across key sectors (such as waste, forestry, agriculture, transport and urban form). It could assist local authorities to consider GHG emissions when making decisions on infrastructure and transport consents or to consider opportunities for reducing emissions at the design and layout stages for site specific developments, for example.

The guidance would primarily be targeted at local authorities and would focus on providing practical guidance on the consideration of resource consent applications and plan changes. This could include:

- clarifying that the cumulative effect of GHG emissions on climate change (regardless of the scale of the discharge) is a relevant effect to consider under section 104(1)(a)
- guidance on how to consider proposals to offset the GHG emissions of an activity by proposing measures that have a positive effect on climate change (for example, afforestation) under section 104(1)(ab)
- guidance on how wider climate changes policies and targets (including the emissions reduction plan prepared under the CCRA) should be considered as an "other relevant matter" under section 104(1)(c)
- clarifying the extent to which the 'permitted baseline' should be considered when assessing applications with GHG emissions under section 104(2)
- guidance on how to consider the 'net' GHG emissions from a proposal (for example, where a proposal will reduce overall emissions compared to alternative options but there are some residual point-source GHG emissions).

The guidance document could be considered as an “other relevant matter” under section 104(1)(c) of the RMA, but it would not have any legal status.

The guidance would also cover how to consider GHG emissions when preparing plans and policy statements, and when considering private plan change requests. This would include guidance on how to “have regard to” the relevant emissions reduction plan when preparing policy statements and how to consider GHG emissions when dealing with plan change applications involving land-use change and development with long-term GHG implications.

Table 11: Option 5.1 – pros and cons

Pros	Cons
Provides some level of guidance to support decision-making on GHG emissions under the RMA while system wide reform takes place.	Guidance does not have legal weight and may be given limited consideration by applicants and decision-makers.
Guidance can be developed and updated in timely manner as practice evolves.	Provides limited assistance to decision-makers to scrutinise applications on the basis of GHG emissions.
Less risk that guidance results in unintended decisions and outcomes (for example, applications are less likely to be declined on the basis of GHG emissions if the only guidance available is non-statutory).	

Questions – Non-statutory guidance on non-industrial emissions

36. Do you support the development of non-statutory guidance on how to consider wider GHG emissions (direct and indirect) through RMA planning and consenting processes?
37. What are the key areas that guidance needs to cover?
38. How can this guidance complement work underway to support emission reductions in other sectors, including urban development, transport and electricity generation?
39. Is there anything that has been overlooked in this section with regards to the reality of business practices? For local government: is there anything that you feel has been overlooked in this section with regards to the reality of consenting practices?

How to have your say

The Government welcomes your feedback on this consultation document. The questions throughout the document and summarised here are a guide only. You do not have to answer all the questions, and all comments are welcome.

To ensure others clearly understand your point of view, you should explain the reasons for your views and give supporting evidence if needed.

Timeframes

This consultation starts on 8 April 2021 and ends on 20 May 2021.

When the consultation period has ended, officials will analyse and summarise submissions. They will provide final policy advice to the Government on the preferred options.

How to make a submission

You can make a submission in two ways.

1. Use our online submission tool, available at:
<https://consult.environment.govt.nz/climate/phasing-out-fossil-fuels-in-process-heat>
This is our preferred way to receive submissions.
2. Write your own submission.

If you are posting your submission, send it to: Cassidy McLean-House, Ministry for the Environment, PO Box 10362, Wellington 6143. Include:

- the title of the consultation
- your name or organisation
- your postal address
- your telephone number
- your email address.

If you are emailing your submission, send it to mitigation@mfe.govt.nz as a:

- PDF
- Microsoft Word document (2003 or later version).

Submissions close at 5pm, 20 May 2021.

For more information

Please direct any queries to:

Email: mitigation@mfe.govt.nz

Publishing and releasing submissions

All or part of any written submission the Ministry for the Environment receives electronically or in printed form, including your name, may be published on our website, www.mfe.govt.nz. Unless you clearly specify otherwise in your submission, the Ministry will consider that you have consented to website posting of both your submission and your name.

Submissions may also be released to the public under the Official Information Act 1982 following requests to the Ministry for the Environment (including by email). Please advise if you object to the release of any information contained in your submission and, in particular, which part(s) you consider should be withheld, together with the reason(s) for withholding the information.

Any personal information you supply to the Ministry when making a submission will only be used by the Ministry in relation to the consultation covered in this document. You have the right to request access to or to correct any personal information you supply to the Ministry.

If you have any questions about the publishing and releasing of submissions, or if you would like to access or correct any personal information you have supplied, please email info@mfe.govt.nz.

Consultation questions

Problem definition, objectives and scope

1. Do you agree with this characterisation of the status quo? If not, please provide evidence to support your views.
2. How would you describe the status quo? What other factors should be considered?
3. Do you agree with the characterisation of the problem regarding the regulatory gap in the RMA? If not, why not?
4. Do you agree with the characterisation of the problem regarding the regulatory backstops to support the NZ ETS? If not, why not?
5. In your view, what is an effective and efficient threshold for low-GHG emitting process heat sites that would be out of scope of the requirements? Options and combinations of options include: below 100 tonne CO₂-e/year, 50kW, 2 MW, assets operating fewer than 400 hours per year. Please explain why.
6. Do you agree with the scope of industrial emissions proposed to be subject to national direction instruments? If not, why not?
7. Should commercial sector water and space heating (above an appropriate size threshold) be included in the scope of national direction? If not, why not?
8. What is your view on the proposal to exclude emissions from other sectors in the current scope (note: intention is for a more fulsome package of national direction on climate change to be developed through the new resource management system).

Preferred RMA national direction instrument

9. Do you agree that the preferred option (a NES supported by a targeted NPS) will be the most effective way to achieve the policy objectives and to reduce implementation costs and uncertainty for local authorities, applicants and consent holders? If not, why not?
10. Do you agree with the impact analysis of this option?
11. In your view, what is a fair and reasonable duration for consents that would balance the need for investment certainty with the need to improve energy efficiency and reduce emissions over time?

Preventing discharge of GHG emissions from new fossil fuel assets

12. Should the ban on new coal-fired assets for low and medium temperature requirements be implemented through a prohibited activity rule in national direction? Should there be any exemptions for small-scale coal-fired assets (for example, below 50kW, 2 MW or 100 tonne/year) or flexibility to consider site specific constraints through consenting processes?
13. Do you agree with the approach to avoid new fossil fuel assets (excluding coal) unless it can be demonstrated there are no feasible alternatives, and where the applicant prepares a GHG emission plan, and complies with relevant best practices? Are there more effective and efficient ways to achieve this outcome?
14. How can national direction and guidance best assist applicants and consent authorities to assess economically and technically feasible alternative fuel options?
15. Should the policy approach for new process heat assets target specific fossil-fuel sources or should it take a fuel neutral approach? In your view, what is the best approach to define thresholds and requirements?

16. Referring to each option, what are the likely compliance costs and impacts on your firm? Who are the small to medium size industry users that could struggle to meet the requirements?
17. What supporting initiatives are needed to transition away from fossil fuels in new industrial sites?
18. Is there anything that you feel has been overlooked in this section with regards to the reality of your businesses' industrial practices? Or for local government: is there anything that you feel has been overlooked in this section with regards to the reality of consenting practices?

Phasing out fossil fuels in process heat

19. Is 2037 an appropriate 'phase-out' date for low and medium temperature coal process heat requirements? Is it necessary to include a review date within the national direction instrument (potentially around 2025) to assess the development of alternative fuel markets closer to the phase out date?
20. Should there be a longer lead-in time for existing coal-fired assets that are currently permitted before these are subject to the NES consent requirements?
21. Is it appropriate to phase out other (non-coal) fossil fuels in existing industrial assets through consenting processes and best practice requirements?
22. Is a more flexible approach for the re-consenting of other (non-coal) fossil fuel-fired assets warranted/needed?
23. Should there be a set phase-out date for other (non-coal) fossil fuels, including natural gas? What are the potential benefits and risks?
24. Should the NES require regional councils to review consent conditions of significant GHG emitters with long-term permits to help reduce emissions? What are the benefits and risks?
25. What are the appropriate size (operating capacity and/or volume of emissions) and/or consent duration thresholds to trigger a review of existing discharge permits? What is a realistic and achievable timeframe for regional councils to undertake a review of the discharge permits for large emitters in their region?
26. Referring to each option, what are the likely compliance costs and impacts on your firm? Who are the small-to-medium size industry users that could struggle to meet the requirements?
27. Is there anything that has been overlooked in this section with regards to the reality of business practices? For local government: is there anything that you feel has been overlooked in this section with regards to the reality of consenting practices?

GHG emissions and best practice requirements

28. Do you agree with the proposed thresholds for small sites being between 100 and 2,000 tonne CO₂-e/year and large sites, being over 2,000 tonne CO₂-e/year, in the preparation of a GHG emissions plan?
29. Do you agree with the proposed requirement that GHG emissions plans for large sites be reviewed/certified by a 'suitably qualified expert'? Should this be limited to larger sites?
30. What guidance and templates would be useful to help industry and councils prepare and review GHG management plans?
31. How should best practice requirements be incorporated into national direction? What factors should councils consider when determining what is economically and technically feasible at the site-level?

32. For large boilers and combustion plants, should an emission limit value be included in the consent conditions, based on the specific application outlined in the GHG emissions plan (fuel use x emission factor), as occurs in Europe and the US?
33. Referring to each specific schedule, do you agree with the content of the GHG emissions plans for small (Schedule 1) and large (Schedule 2) sites?
34. In your view, are the materials referenced in Appendix Two appropriate for each sector and across sectors?
35. Is there anything that has been overlooked in this section with regards to the reality of business practices? For local government: is there anything that you feel has been overlooked in this section with regards to the reality of consenting practices?

Non-statutory guidance on non-industrial emissions

36. Do you support the development of non-statutory guidance on how to consider wider GHG emissions (direct and indirect) through RMA planning and consenting processes?
37. What are the key areas that guidance needs to cover?
38. How can this guidance complement work underway to support emission reductions in other sectors, including urban development, transport and electricity generation?
39. Is there anything that has been overlooked in this section with regards to the reality of business practices? For local government: is there anything that you feel has been overlooked in this section with regards to the reality of consenting practices?

Appendix One: GHG emissions plan requirements

This sets out the proposed requirements for GHG emissions plans for small sites. This is indicative only and will be further refined following public consultation and the drafting of the instrument following policy decisions.

Schedule A: GHG emissions plan requirements for small sites

GHG emitting asset

Description, purpose, equipment: type, capacity, age, date of last major upgrade

Fuel(s) used: type(s), volumes (5 last years), emissions factor from the Ministry for the Environment's up to date tables.

End-use(s) temperature(s).²⁶

Accelerated depreciation: End date of depreciation. What is the IRD depreciation rate? (Evidence required).

Emissions: Yearly average (based on the last 5 years) in tons CO₂ equivalent. Energy technology options

Energy technology selection

Description of each option, with costs levelised cost of energy (LCOE) and supporting evidence (for example, quotes)

Is there any end-use above 100°C?

Does the option comply with the relevant best practice requirement? e. g. the PAS for high temperature heat pumps (as listed in Appendix Two)

For end-uses above 100°C: Does the proposal comply with the relevant best practice requirement?

Explanation of derogation: Request to prolonged use fossil fuels because it is unavoidable (low GHG emitting/low-impact use is exempt). For example, technical constraints, costs, low-emissions market or infrastructure constraints

Estimated emissions after the asset replacement.

²⁶ The end use temperature is the temperature required by a process step to achieve its purpose. For example, 82°C for sterilisation. 100°C for blanching vegetables or fruits. 1200°C to melt glass.

Assumptions and Information Sources

Transition plan – Implementation timeframe of selected option(s)

For new sites: at time of plant construction

For existing sites: transition planning timeframe (scheduling) and IRD depreciation rate of main energy assets are provided.

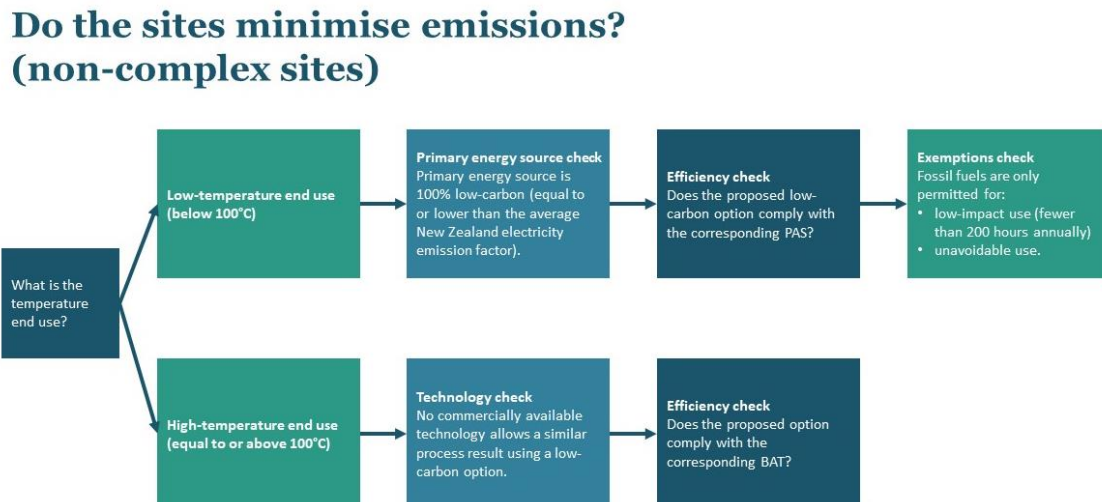
Review and reporting

A description of the approach for assessing progress against the plan and reporting that progress to the consent authority, including—

- timelines for reporting progress; and
- how any requirement to report under a resource consent will be met.

Overview of steps

Figure 1: Proposed steps for a non-complex site exemption



Working example

An existing site uses a boiler to generate hot water that will be used at various stage of the process. This is the only GHG emitting asset of the site. The consent is set to expire in 2021 and the site owner is looking to renew that consent.

Using MfE’s most recent emissions factors and the yearly energy consumption of fuel (averaged over the last 5 years), the applicant to the consent renewal knows that this boiler emits 1,000 tons of CO₂ equivalent of GHG a year.

The lead-time is too short to allow the replacement of the asset by a low-carbon asset before the re-consenting. Therefore, the applicant must provide a transition plan in its application.

The highest end-use temperature is 90°C, and so the applicant intends to replace the boiler with a high temperature heat pump as he/she considers it to be the most relevant option.

This is a low-carbon option as it presents an emission factor well below the electricity emission factor, due to a coefficient of performance (COP) of 3.

In the GHG emissions plan, the applicant proposes to commit to a date of replacement in 2025. This is justified, due to the time indicated by the electricity distributor (Lines Company) it will take to provide the grid upgrade required to enable the extra electricity load from the heat pump.

As an extra-information, he/she also indicates that the heat pump supplier can't provide the equipment before 2022, and precise time constraints for civil work and engineering studies.

The applicant will provide the relevant best practice documents – in this case the PAS for high temperature heat pumps – as a specification to its potential suppliers for the procurement process. Because this procurement will not happen a few years, the applicant joins a letter of commitment to do so to its application.

The council can grant this application with conditions on the basis that a GHG emissions plan is supplied by the applicant that outlines:

- (a) The proposed transition option is low carbon;
- (b) The applicant made a commitment that the equipment sourced will be compliant with the best practice documents outlined on EECA's website (in this case the PAS for heat pumps);
- (c) The proposed date of transition is acceptable considering the external constraint to upgrade the electricity supply;

The consent will include this as a condition of consent, and the council will be responsible for checking compliance with this milestone in 2025. In 2025, the applicant will have to provide to the council the proof that the asset replacement happened and that it is compliant with the relevant best practice document. If it does not, then the site will be in breach of its consent.

Schedule B: GHG emissions plan requirements for large sites

This sets out the proposed requirements for GHG emissions plans for large sites. This is indicative only and will be further refined following public consultation and the drafting of the instrument following policy decisions.

Site background and activity

For existing sites: Current Process and significant energy uses covering at least 90 per cent of scope 1 and 2 emissions of the site

For new sites: Design plans and documents with energy and emissions estimates

Energy and emissions reduction policy and objectives

Commitment of top management

Commitment to continuous improvement

Long-term focus emission reduction options – identified and described

Energy efficiency options (general, cross-sector),

Changes in process: sector/process-specific BAT options (references to relevant Standards of Reference outlined on EECA's website, including Energy Efficient Plant Design **for new sites**)

Energy technology (fuel switching) options (relevant PAS referenced)

Emission reduction options – costed and selected

Projects are costed (capex and opex changes), and include relevant indicators (such as LCOE, NPV, Marginal Abatement Cost Analysis)

Explanation of any derogations from relevant low-carbon and BAT options, with supporting evidence (for example, quotes, IRD depreciation rate of main energy assets are provided)

Implementation

Implementation pathway: scheduling of selected projects to be implemented on a logical timeline,

Operating controls, procedures and sub-metering for significant energy uses

Staff structures and responsibilities

Training, awareness and competence

Critical dependencies

Assumptions and Information Sources

Monitoring

- Corrective and preventative action
- Record-keeping

Next Steps

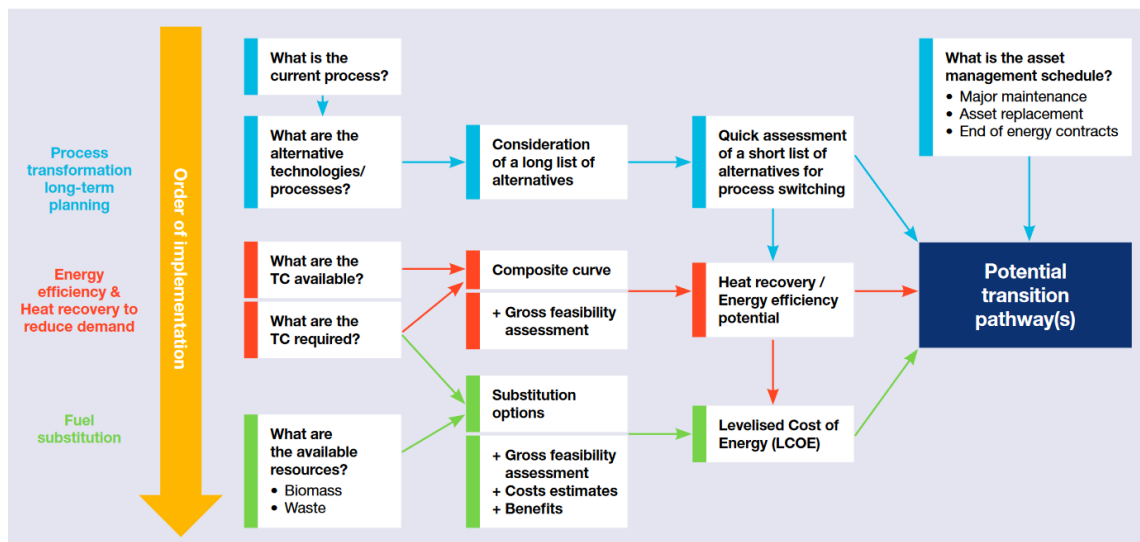
- Immediate Actions for next 12 months
- Actions for next three years
- Future Actions

Review and reporting

A description of the approach for assessing progress against the plan and reporting that progress to the consent authority, including—

- review and report by a *suitably qualified expert*²⁷
- timelines for reporting progress; and
- how any requirement to report under a resource consent will be met.

Figure 2: Steps of the GHG emissions plan



Source: EECA (2019)

²⁷ EECA or EECA's programme partners as listed on their website.

Appendix Two: Best practice material incorporated as matters for consideration available on EECA's website

Sector / Application	Document(s) of reference
Energy management	BREF or EECA Energy Management Journey
Heat pumps	New Zealand Publicly Available Specification (NZ PAS)
Biomass boilers	NZ PAS
Meat processing	BREF (05.2005)
Pulp, paper and board processing	BREF BATC (09.2014) US EPA Pulp and Paper (PDF)
Wood-based panels production	BREF BATC (11.2015)
Large combustion plants	BREF BATC (07.2017) US EPA Large Industrial/Commercial/Institutional Boilers

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