

Implementing a ban on new fossil-fuel baseload electricity generation

AUGUST 2023



MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government



**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
HĪKINA WHAKATUTUKI

Ministry of Business, Innovation and Employment (MBIE) Hīkina Whakatutuki – Lifting to make successful

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MBIE seeks written submissions on the issues raised in this document by **5pm on 2 November 2023**.

Your submission may respond to any or all of these issues. Where possible, please explain the reasons for your answer, include evidence to support your views, for example references to independent research, facts and figures, and include relevant examples.

Please use the submission template provided on the [MBIE website](#). This will help us to collate submissions and ensure that your views are fully considered. Please also include your name and (if applicable) the name of your organisation in your submission.

Please include your contact details in the cover letter or e-mail accompanying your submission.

You can make your submission by:

- [completing the survey on the MBIE website](#) (recommended for shorter submissions only)
- emailing your submission as a Microsoft Word document to electricitymarkets@mbie.govt.nz.

Please direct any questions that you have in relation to the submissions process to electricitymarkets@mbie.govt.nz.

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Ministerial Foreword

We need to do things differently if we are to avoid the impacts of climate change. To play our part in limiting global warming to 1.5°C, the Government has committed to reaching net zero for all greenhouse gas emissions (excluding biogenic methane) by 2050.

Reaching this goal will require a substantial and coordinated effort, and a commitment from across government that we are not shy of making. The Government is focused on the long-term strategic work of system change to a high performing, low emissions future.

The energy system has a critical role to play. In 2021, emissions from energy made up 40 per cent of New Zealand's total gross emissions.¹ Cutting emissions from energy is essential to meeting our international climate commitments and reducing the impacts of climate change.

New Zealand is coming from a strong starting point, with a highly renewable electricity system New Zealanders can be proud of. Compared to many other countries, New Zealand's energy sources are highly reliable, renewable, and affordable. The challenge now is to increase the share of renewable energy, while providing affordability and reliability.

The Government has already made substantial progress in decarbonising the New Zealand energy system, including through the Government Investment in Decarbonising Industry programme, improvements we have underway to speed up consenting for new renewable generation, and the Warmer Kiwi Homes programme to reduce New Zealand's energy use while providing healthier homes.

To further this work, I am now releasing a package of consultation papers, each addressing a different challenge in the energy transition.

This discussion document seeks feedback on the design and implementation of a ban on new fossil-fuel baseload electricity generation. Fossil fuels will continue to be needed throughout the energy transition, but it's important we manage this in a way that doesn't lock in further emissions for years to come. Therefore, we must plan ahead to ensure energy investments made today reflect our international commitments and do not put future New Zealanders at risk. The future of energy in New Zealand is renewable.

I welcome your feedback on this document, your insight will inform our pathway to an energy system that is secure, affordable and climate resilient.

Hon Dr Megan Woods
Minister of Energy and Resources



¹ New Zealand's Greenhouse Gas Inventory 1990–2021 snapshot:
<https://environment.govt.nz/publications/new-zealands-greenhouse-gas-inventory-19902021-snapshot/#new-zealands-gross-and-net-emissions>

Chapter One: Introduction

PURPOSE OF THIS DOCUMENT

1. The purpose of this document is to seek feedback on the design and implementation of a ban on new fossil-fuel baseload electricity generation. Feedback will be used to inform final government policy decisions, expected to be made in late 2023.
2. This document is a companion document to the *Measures for transition to an expanded and highly renewable electricity system* issues paper. The issues paper and this document form part of larger suite of energy sector discussion documents the government is consulting on.

BACKGROUND

3. The Government has committed to ambitious action on climate change, including:
 - a target for 50 per cent of total final energy consumption to come from renewable sources by 2035
 - a legislated net-zero target of long-lived greenhouse gas emissions by 2050
 - a range of international commitments.²
4. The Government's first Emission Reductions Plan (ERP) sets out how New Zealand will meet the first emissions budget for 2022–25 and put New Zealand on track to meet future emissions budgets.³ Through the ERP, the Government outlined an aspirational target of 100 per cent renewable electricity by 2030. This is to be reviewed in 2024 prior to the release of the second emissions reduction plan.
5. The Government's ERP set out policies and strategies to decarbonise every sector of the economy, including the energy and industry sectors. This included an action to “ban new fossil-fuel baseload electricity generation to send a clear message that this has no future in Aotearoa.” The action is not intended to ban new fossil-fuelled ‘peaking’ plants. Nor is the action intended to impact the operations of existing baseload and peaking fossil-fuel electricity generation plants.
6. In New Zealand, the term ‘baseload’ is most commonly used for those generators that run continuously, except for maintenance, up to the maximum capacity allowed by their water, steam, or fuel supply. This includes all ‘use it or lose it’, ‘run-of-river’ hydro and geothermal plants, and wind and solar generation plants. The term ‘baseload’ is also used for those generators that run generally at constant load and do not follow the daily load curve, or whose electricity output is closely tied to the co-production of industrial heat (known as co-generation).
7. This contrasts with peak load generators, or ‘peakers’, that generate only for minutes or hours

² For example, New Zealand's commitment to the No New Coal Power Compact <https://www.mfat.govt.nz/en/environment/climate-change/working-with-the-world/building-international-collaboration/commitments-made-at-cop26/>

³ <https://environment.govt.nz/assets/publications/Aotearoa-New-Zealands-first-emissions-reduction-plan.pdf>

each day, during the sharpest demand peaks.⁴

8. The Government is seeking to remove the residual risk that investment decisions, taken by electricity generators in the short-term, could lock in a high emissions trajectory through building new baseload fossil-fuel electricity generation plants. This includes co-generation plants that produce industrial process heat as well as electricity (note that in Chapter 2 we discuss whether an exemption is required for co-generation plants).
9. As the Government has already committed to actions set out in the ERP, including to ban new fossil-fuel baseload electricity generation, this document focuses on seeking feedback on how best to design and implement this policy.
10. MBIE has identified that legislation is the preferred option to implement the ban on new fossil-fuelled baseload generation. MBIE has produced a Regulatory Impact Statement titled *Banning new fossil-fuel baseload electricity generation* that supports the release of this discussion document and may be useful for readers and submitters to refer to.

What regulatory systems, or systems, are already in place?

11. There is no direct intervention restricting the construction of baseload fossil-fuelled generation or any other type of plant.
12. There are indirect interventions affecting the construction of new generation plant, including:
 - air quality standards such as through the National Environmental Standards for Air Quality
 - the Emissions Trading Scheme (which prices greenhouse gas emissions)
 - the National Policy Statement (NPS) on Renewable Electricity Generation
 - resource consent processes under the Resource Management Act 1991 (RMA)
 - government targets, such as aspirational target of 100 per cent renewable electricity by 2030, and legislated target of net zero emissions by 2050.

New Zealand Emissions Trading Scheme

13. The New Zealand Emissions Trading Scheme (ETS) is a key tool for meeting our domestic and international climate change targets. The ETS helps reduce emissions by doing three main things:
 - Requiring businesses to measure and report on their greenhouse gas emissions.
 - Requiring businesses to surrender one 'emissions unit' (known as an NZU) to the Government for each one tonne of emissions they emit.
 - Limiting the number of NZUs available to emitters (i.e., that are supplied into the scheme).
14. Electricity generators are fully exposed to the ETS. The ETS makes it more expensive to use fossil fuels in electricity generation. This provides an incentive to use less electricity, choose low emissions alternatives, invest in renewable generation, and to innovate and find new

⁴ <https://www.mbie.govt.nz/assets/2020-thermal-generation-stack-update-report.pdf>

technologies to replace fossil gas, coal, and diesel-powered generation.

15. The NZU spot price had increased by more than 150% in the past two years, from around \$35 to over \$88 in September 2022. The NZU spot price on the secondary market is trading around \$60 as of 1 August 2023.

Relevant developments in resource management legislation

16. The Resource Management Amendment Act 2020 took effect on 30 November 2022. One of the changes introduced by this Amendment Act was to enable decision-makers to consider the effects of a resource consent application on climate change. It means that councils would need to consider the Emissions Reduction Plan and National Adaptation Plan when preparing policy statements and plans. This could extend to considering, on a case-by-case basis, resource consent applications relating to new fossil-fuelled electricity generation.
17. Also of note is the in-development national direction on industrial greenhouse gas emissions, in the form of a NPS and National Environmental Standards (NES) under the Resource Management Act 1991 (RMA). The NPS and NES will provide policy direction and a supporting rule framework for phasing out fossil fuels in process heat, such as the use of coal boilers.
18. The scope of the in-development NPS on industrial greenhouse gas emissions excludes electricity generation. By definition all 'industrial and trade premises' that are not users of process heat and other 'non-industrial' sectors that emit greenhouse gas emissions are out of scope from the NPS and NES. This includes electricity generation, co-generation, as well as waste, transport, agriculture, mobile plant, and heritage uses such as coal-fired steam trains.⁵

What is happening with existing baseload fossil-fuel power stations?

19. The ETS (as well as other factors) are decreasing the run time of existing fossil-fuelled thermal power stations through increasing their cost of operating. Less efficient, high-emitting fossil fuel power plants (such as coal-fired plants) face reduced annual operating hours. For example, Concept Consulting's recent "Which way is forward?" report found that the use of coal as an electricity generation fuel will diminish in the near future primarily due to the rising ETS price.⁶
20. Concept Consulting also commented that slow-start fossil-fuel thermal generation, which typically takes 6 to 12 hours to start generation, or up to 72 hours in the case of Contact Energy's Taranaki Combined Cycle (TCC) plant, are not well suited to providing the short-duration, short-notice flexibility that will increasingly be required as the power system integrates more intermittent renewable generation.⁷
21. Some companies with existing baseload fossil-fuel electricity generation have signalled their future intentions for these plants. For example, Contact Energy's 377 MW TCC plant, which uses fossil gas to produce electricity, is expected to close in 2024 once its geothermal power

⁵ <https://environment.govt.nz/assets/publications/Final-redactions.-Dec-2022-Cab-paper-national-direction-on-industrial-greenhouse-gas-emissions-Redacted.pdf>

⁶ https://www.concept.co.nz/uploads/1/2/8/3/128396759/which_way_is_forward.pdf

⁷ MBIE notes that Huntly's Unit 5 combined cycle gas plant has been increasingly running flexibly, using its "two-shift mode" - <https://www.energynews.co.nz/news/gas-generation/134860/huntly-unit-5-now-routinely-running-flex-mode>

station at Tauhara is commissioned.⁸ Similarly, Contact Energy has signalled the closure of its 44 MW Te Rapa co-generation in 2023 at the expiry of its contract with Fonterra to provide electricity.⁹

22. In New Zealand, most fossil-fuel generation that used to operate in a baseload capacity no longer operates that way because baseload operation is generally more expensive than renewable plants.
23. The decreasing run-time of baseload fossil-fuel generation plants, coupled with the risk of uncertain investment into the upstream fossil gas sector, increases the risk of new investing in new baseload fossil-fuel electricity generation.

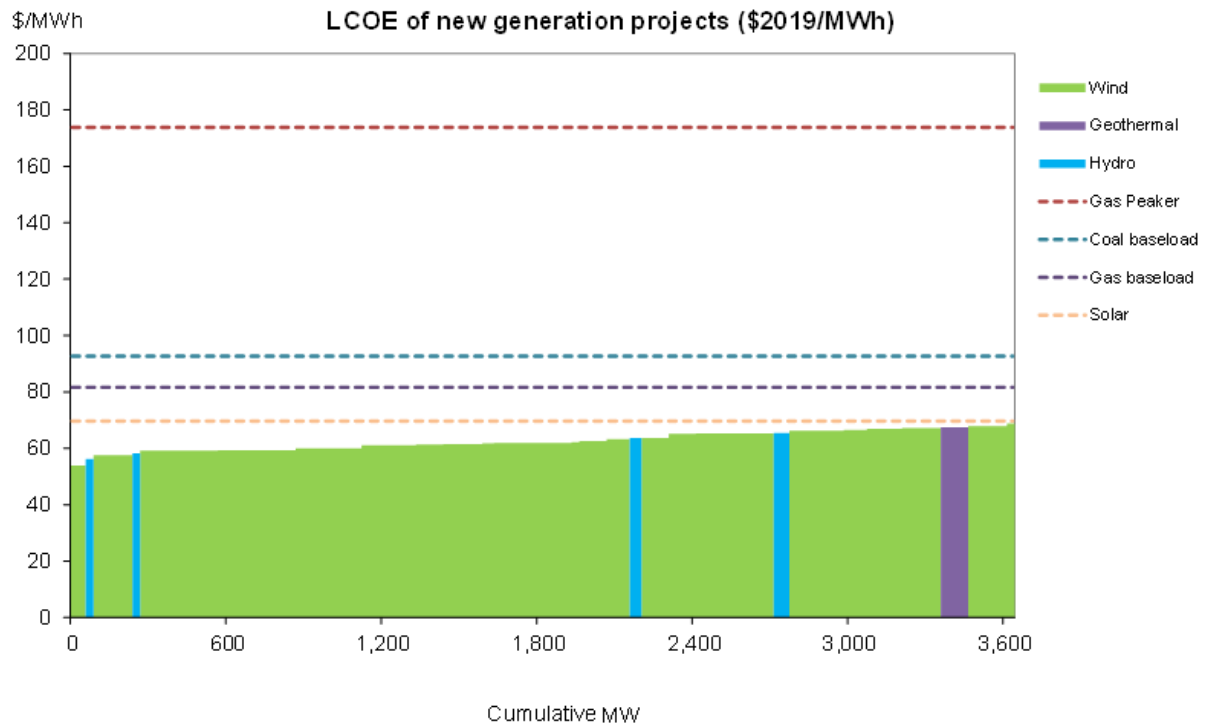
What is the likely future need for fossil-fueled generation plants?

24. In MBIE's 2019 Electricity Generation and Demand Scenarios (EDGS) report, the reference scenario indicated that by 2050, 6,300 MW of electricity generation capacity is needed, with 55 per cent of the new build being wind generation. New fossil gas build would be required but it would only be in a peaking role (and not baseload). Across all 5 scenarios in the MBIE EDGS report, none had any new baseload fossil-fuel power stations built.
25. Earlier modelling in the Climate Change Commission's demonstration path had 200 MW of fossil gas peakers being built by 2035. Later modelling by Boston Consulting Group (BCG), the New Zealand Battery Project and the Market Development Advisory Group (MDAG) all predicted a continued role for fast-start fossil gas peakers, which in many cases are replaced by some form of green peaker (usually biofuels) during or beyond the transition in the 2030s. These fast-start fossil gas peakers, supplemented by renewable technology alternatives, are needed in their models to ensure adequate system security and reliability at least cost.
26. Additionally, the Gas Transition Plan (GTP) Issues Paper notes that as more renewable generation is commissioned, more fossil gas peaking generation is likely to be needed to meet the additional variability in supply and ensure security of electricity supply. The GTP Issues paper also notes that intermittent electricity generation, could, in the absence of other large baseload consumers of fossil gas, be unable to provide sufficient demand to fund fossil gas field development.
27. Further, investment in onshore wind, geothermal and grid-scale solar is lower from a LCOE perspective.

⁸ <https://www.newsroom.co.nz/contact-warning-against-chaotic-closure-of-gas-power-plants#:~:text=Contact%20Energy%20is%20building%20a,commissioned%2C%22%20the%20report%20said.&text=updated%20science%2Dbased%20targets.,for%20our%20remaining%20thermal%20assets.%22>

⁹ <https://contact.co.nz/aboutus/media-centre/2022/06/21/te-rapa-power-station-closing-in-june-2023>

Graph 1: MBIE LCOE of new generation projects (\$2019/MWh)



28. If lower cost plants are built first, the graph shows that in New Zealand, renewable generation options (geothermal, wind and solar) are currently cost competitive with baseload fossil-fuelled generation and are likely to become even more competitive over time as the price of carbon increases.¹⁰
29. The observation above reflects standard assumptions about future fossil fuel prices and emissions prices. The position for any particular baseload generation development could be different, depending on its project-specific fuel costs or other factors affecting the business case. It is conceivable that new fossil-fuelled co-generation could be lower cost than alternatives involving renewable electricity and renewable heat sources.
30. The companion document *Measures for transition to an expanded and highly renewable electricity system* issues paper indicates that growth in intermittent renewable generation by itself is not a complete substitute for baseload thermal generation. Without addressing the issue of firming capacity, fossil-fuel based generation may need to be required until an economic replacement fuel (e.g., biofuels) or technology is readily available.
31. The issues paper also considers whether any extra measures are needed to support new renewable generation or new firming/dispatchable capacity during the electricity system transition.

¹⁰ The carbon price used in this model was \$35 (\$/tonne CO₂). The NZU spot price on the secondary market is trading around \$60 as of 1 August 2023.

Are there any planned new fossil-fueled baseload power stations in the pipeline?

32. MBIE is currently not aware, from publicly available information, of any announced plans to build a new fossil-fuelled baseload power station. However, we are aware of existing consents under the RMA, typically for fossil gas-fired peaking plant, being in effect for the following:
- Genesis Energy’s Huntly site was re-consented in May 2012 allowing for fossil-fuel thermal generation operations on the site until 2037. In December 2016, Genesis also received consents to replace its Rankine units any time during the subsequent 20 years with gas-fired generation. This could include the installation of four open-cycle gas turbines of around 100 MW each, or eight 50 MW units in two stages, or a combination up to a total capacity of 400 MW.
 - Todd Energy was granted resource consent in May 2017 for a new 360 MW open cycle gas turbine power plant on a site located in the Tihiroa area, near Otorohanga in the Waikato (‘Waikato Power Plant’). The consent allows for a 10-year lapse period to begin construction.
 - Contact Energy’s Stratford power station (home of their TCC and peaking plants) has a resource consent to build another gas-fired plant.
33. In 2020, MBIE commissioned engineering consultancy firm WSP to review and update the thermal generation component of the “Generation Stack”.¹¹
34. WSP considered in its 2020 report the main potential options for further construction of new fossil-fuel power plants. It identified the ‘Waikato Power Plant’ (Todd Energy’s consented Otorohanga site) and Huntly repowering by Genesis Energy to be possible. It also considered that further refurbishments, replacements of existing plants, or new build co-generation plants remain a possibility in the forward time frame, and would seem likely to be predominantly biogas, biodiesel or conventional gas-based plants depending on resilience of supply.

Prior legislative intervention – Electricity (Renewable Preference) Amendment Act 2008

35. In 2008, the Electricity (Renewable Preference) Amendment Act 2008 took effect as Part 6A of the Electricity Act 1992. The Electricity (Renewable Preference) Amendment Act introduced a ten-year moratorium on the construction of new baseload fossil fuelled generation stations with the provisions applying to any proposed fossil-fuel generation above 10 MW that used more than 20 per cent of fossil fuels as its fuel source.
36. The introduction of the ten-year moratorium was intended at the time to be a complementary measure to the introduction of the ETS. It was designed to ensure that the construction of new fossil-fuel baseload electricity generation would not cause a sustained increase in electricity sector greenhouse gas emissions while climate change policy was implemented through the ETS.
37. The Electricity (Renewable Preference) Amendment Act was repealed shortly after it was enacted by the incoming government in 2008. Therefore, the legislation was not in place for long enough to understand any impacts of the previous policy.

¹¹ <https://www.mbie.govt.nz/assets/2020-thermal-generation-stack-update-report.pdf>

38. The main provisions of the Electricity (Renewable Preference) Amendment Act were as follows:

- A ten-year moratorium on new fossil-fuel baseload electricity generation, with provisions applying to any proposed fossil-fuel generation above 10 MW that used more than 20 per cent of fossil fuels as its fuel source.
- A limitation on the expansion of the generating capacity (up to 10 per cent) of existing fossil-fuel plant (subject to the ability to apply for an exemption if required).
- Ministerial exemptions to the prohibition in some circumstances could be granted, on the recommendation of the regulator (the then Electricity Commission), including:
 - Emergency (whether present or future) purposes e.g., to ensure security of supply.
 - A non-baseload plant i.e., peaking plant, that complied with average load factor, emissions intensity, and start-up time standards.
 - Co-generation plants that complied with prescribed efficiency standards.
 - Replacement of existing baseload fossil-fuelled electricity generation with new plant that complied with prescribed efficiency and emissions standards.
 - The use of fossil-fuel with renewable fuels, with an acceptable proportion of fossil-fuel use to be prescribed.
- The ability for the regulator (the then Electricity Commission) to grant temporary emergency exemptions from restrictions, for example, relaxing the running hours limitation to ensure security of supply.
- The then Electricity Commission monitored compliance with the provisions.
- A compliance regime with significant financial penalties for breaches.

Question

1

Do you agree that there is a low likelihood of new fossil-fuel baseload electricity generation plant being built? If not, why not?

Chapter Two: Discussion – design and implementation issues

INTRODUCING LEGISLATION IS THE PREFERRED OPTION TO IMPLEMENT THE BAN

39. The preferred option to implement the ERP action to ban new fossil-fuel baseload electricity generation is to introduce a restriction on new fossil-fuel baseload generation plants via legislation.
40. To reiterate, the ban is not intended to include new fossil-fuelled ‘peaking’ plants. Nor is the ban intended to impact the operations of existing baseload and peaking fossil-fuel electricity generation plants.
41. The overall objective of the ban is to eliminate the risk of new baseload fossil-fuel electricity generation being added to New Zealand’s electricity supply, which would be counter to New Zealand’s climate change objectives, in a way which does not undermine our security of supply.
42. To achieve the high-level objectives above, the following principles apply in considering the design of the policy:
 - effectiveness in restricting new fossil-fuel baseload generation
 - impact on electricity security of supply
 - impact on carbon emissions
 - impact on investor certainty.

KEY DESIGN CONSIDERATIONS FOR FEEDBACK

43. MBIE has identified key issues for consideration and feedback on the design of the ban. This list of issues is not exhaustive, and we welcome any other feedback or suggestions that submitters may have.
44. The Electricity (Renewable Preference) Amendment Act 2008 provides a useful reference point in designing the ban on new fossil-fuel baseload electricity generation. We discuss below some of the features of the previous moratorium on thermal generation, such as previous exemption criteria, and consider whether they are still relevant today.
45. For clarity, the proposed ban on new fossil-fuel baseload electricity generation is intended to be indefinite. This contrasts the Electricity (Renewable Preference) Amendment Act which introduced a ten-year moratorium.

How can we make it clear that fossil-fuel non-baseload or peaking generation is not included in scope?

46. The Electricity (Renewable Preference) Amendment Act implemented a restriction on new generation plants that were greater than 10 MW in nameplate capacity and used greater than 20 per cent of fossil fuels in total fuel input. The Electricity (Renewable Preference)

Amendment Act did not contain a definition of 'baseload'. Rather, a person wishing to operate a new fossil-fuel non-baseload/peaking generation plant could only do so under an exemption from the Minister.

47. To ensure that plant exempted under this category did not inadvertently include baseload generation (which is not permitted) the regulations required maximum allowable values for three parameters to be prescribed that could only be met by non-baseload plant. These prescribed parameters were:
 - average Load factor
 - greenhouse gas emissions
 - start-up time.
48. MBE considers it would be preferable for a person wishing to build a new fossil-fuel non-baseload/peaking generation plant to not have to apply for an exemption. This would:
 - support the policy intent of restricting investment in new fossil-fuel **baseload** electricity
 - promote investor certainty by making it clear that investment in fossil-fuel peaking plants is still permitted and could lower transaction and compliance costs (compared to the situation of having to apply for exemption).

Question

2

Do you agree that its preferable for investors looking to build a new fossil-fuel non-baseload generation plant not to have to apply for an exemption?

What size of generation plant should be in scope of the ban?

49. The Electricity (Renewable Preference) Amendment Act set a 10 MW rated generating capacity threshold (in addition to 20 per cent of fuel use coming from fossil fuels) to be within scope of the moratorium.
50. The threshold set at the time potentially reflected commercial realities of it being unlikely that investors would look to build a grid-connected new fossil-fuel baseload generation plant of a size smaller than 10 MW due to economies of scale.
51. However, this may run counter to the policy intent of the ban of new fossil-fuel baseload generation plants. To promote the integrity of the policy, it may be preferable to set the threshold at a lower limit. We welcome submitters views on what an appropriate threshold may be and reasons why.

Question

3

What size of new fossil-fuel baseload generation plant should be in scope of the ban?

Should we allow for the replacement of existing baseload fossil-fuelled electricity generation with new plants of a prescribed efficiency and emissions standard?

52. The Electricity (Renewable Preference) Amendment Act permitted an exemption from the Minister to build a new fossil-fuel baseload generation plant so long as it is paired with the retirement of an existing fossil-fuel plant and provides a significant reduction in emissions.
53. The intent of this exemption is to allow for the retirement of existing, less efficient fossil-fuel plants to be replaced with more efficient plants – for example, fossil gas-fired combined cycle gas turbine (CCGT) plants to replace the use of coal-powered stations. Back in 2008 it was considered a risk that a ban on new fossil-fuel baseload investment would likely increase the value of existing inefficient thermal plants and delay its retirement through prolonged refurbishment. A consequence of such action might be to limit the opportunity for significant long-term emission reductions in the electricity sector.
54. This rationale appears to be no longer relevant. Investment in renewable generation such as wind, solar and geothermal is currently favourable and allowing such an exemption appears to run counter to the intent of the policy and would prolong having high-emissions plant in New Zealand.

Question

4

Do you think that there should be an exemption for the replacement of existing baseload fossil-fuelled electricity generation with new fossil-fuel baseload plant of a prescribed efficiency and emissions standard?

How should we treat potential future blended fuels? (e.g., fossil + renewable fuel)

55. The Electricity (Renewable Preference) Amendment Act permitted an exemption from the moratorium to be granted if the Minister is satisfied that the proposal uses an acceptable combination of renewable energy sources and fossil fuels that meets the requirements of certain standards to be set in regulation regarding the proportion of fossil-fuel use, emissions intensity, and energy efficiency.
56. The intent of this regulation was to allow for generation technologies that utilise recyclable or renewable materials in conjunction with fossil fuel, for example, biomass combined with fossil gas or biodiesel blended with another liquid fossil fuel.
57. Genesis Energy recently ran a successful biomass burn trial as they investigate alternative fuel options for their Huntly Power Station. The objective of the week-long trial was to prove the technical viability of operating a Rankine unit solely on biomass. That was achieved with a Rankine running only on biomass for several hours.
58. Depending on the available supply of biofuels these biofuel units may need to run on fossil fuel when bio-fuel supply is low, or alternatively when running on biofuels they may need fossil fuels to achieve ignition and initial starting temperature.

Question

5

Do you think that there should be an exemption for new baseload electricity generation plant that uses blended fuels (i.e., a mix of fossil-fuel and renewable fuel)?

How should new co-generation plants be considered under the new regime?

59. Co-generation is an industrial process in which electricity and another useful by-product such as thermal energy from steam which would otherwise be discarded is re-used to improve the overall efficiency of the process. This reuse of waste steam is more efficient than powering the entire process through electrical energy.
60. Co-generation plants can run on either fossil-fuels or alternative fuels such as wood/biomass. For example, Todd Energy's owns a 25 MW co-generation plant at Kapuni which runs on natural gas. It provides the electricity and steam requirements of the Kapuni Gas Treatment Plant and Fonterra's Lactose factory at Kapuni. It also exports excess electricity into the national grid. An example of a co-generation plant running on biomass is Oji Fibre Solutions' 40 MW cogeneration plant as part of the Kinleith pulp and paper mill which can use wood waste to fuel the power boiler.
61. Under the Electricity (Renewable Preference) Amendment Act, an exemption from the Minister was required to construct a new fossil-fuel cogeneration plant. A further requirement was that the proposed co-generation plant would have to operate above an energy efficiency level prescribed in regulations. No regulations were set as the Electricity (Renewable Preference) Amendment Act was repealed by the incoming government shortly after its enactment.
62. The exemption for co-generation plant in 2008 was put in place to acknowledge that cogeneration technology allows heat that is generated for industrial processes to be used to produce electricity as well and is overall more efficient.
63. That said, providing for an exemption for new fossil-fuelled co-generation plants may not be consistent with current government policy. For example, the government is focussed on reducing emissions from industrial users, in particular for process heat applications, and have programmes of work to support this ambition including the Government Investment in Decarbonising Industry (GIDI) Fund and work on implementing National Direction on Industrial Greenhouse Gas Emissions.

Question

6

Do you think that there should be an exemption for new fossil-fuelled co-generation plants?

How should we treat new fossil-fuel baseload with carbon capture, utilisation and storage (CCUS)?

64. The potential role of CCUS in New Zealand to help us meet our emissions reduction budgets is currently being explored in the GTP Issues Paper consultation.

65. As the GTP Issues Paper notes, CCUS involves the capture of CO₂ from large point sources, such as power generation or industrial facilities that use either fossil fuels or biomass as fuel, or from upstream fossil gas extraction and production facilities.
66. The International Energy Agency's identifies several ways that CCUS can contribute to the energy transition. This includes emissions from existing energy infrastructure, i.e., CCUS can be retrofitted to existing power and industrial plants that could otherwise emit CO₂. Although not directly related to fossil-fuels, some geothermal electricity generators in New Zealand are already capturing significant quantities of CO₂ and hydrogen sulphide. These gases are dissolved and reinjected into the geothermal reservoir.
67. The GTP is the primary vehicle for the development of government policy with respect to the usage of CCUS generally across the economy. However, we would be interested in submitters feedback on their views of whether the ban of new fossil-fuel baseload electricity generation should include an exemption fossil-fuel baseload with carbon capture, usage, and storage (CCUS).

Question

7

Do you think there should be an exemption for new fossil-fuel baseload electricity generation plant with carbon capture, usage, and storage (CCUS)?

Do we need an exceptions regime for security of supply purposes?

68. The Electricity (Renewable Preference) Amendment Act had two exemptions that related to maintaining security of supply. These exemptions included the ability:
- for the regulator (the then Electricity Commissioner) to relax the running hours limitation of non-baseload fossil-fuel plant in the advent of a security of supply event, and
 - for the responsible Minister to grant exemptions to the restriction on new baseload fossil-fuelled generation in the advent of a security of supply event, on the recommendation of the regulator.
69. The ability for the regulator to respond to a security of supply event, for example lake levels being low in any given year, appears to be prudent and still relevant for today. For example, the intent is that if a new fossil-fuel peaking plant was built in the future and it was required to be operating in a more baseload-like manner, due to security of supply reasons, then the regulator would have the ability to exempt this peaking plant.
70. The case for the second exemption, the ability for the Minister to exempt the construction of a new fossil-fuelled baseload electricity generation plant, appears to be less strong. MBIE considers that such an exemption would be required only in extreme circumstances where it is assessed that such a plant is necessary for longer-term security of supply. Given other generation investment options available today such as investment in renewables, it is unclear under what circumstances an investment in new fossil-fuel baseload generation would be preferable from a security of supply perspective. We would be interested in submitters feedback on this issue, giving the ability to apply for an exemption to the construction of new fossil-fuel baseload generation plant is counter to the intent of the policy.

Question

8	Do you agree that an exemption to relax restrictions on non-baseload fossil-fuel plant in a security of supply event is necessary?
9	Do you think there should be an exemption for the construction of new fossil-fuel baseload generation plants, based on security of supply reasons?

RISKS OF IMPLEMENTING A BAN ON NEW FOSSIL-FUEL BASELOAD ELECTRICITY GENERATION

Incentives for gas field development risk

71. Reaction to the prospect of a restriction on new baseload fossil-fuel generation may lead to concern from fossil gas field developers that the legislation will lead to a reduction in fossil gas field development (to the detriment of future electricity security of supply). Currently, approximately 30 per cent of fossil gas consumption is used to make electricity.
72. It is difficult to assess this risk given the size of the electricity generation market for fossil gas use is only one factor. Given the unfavourable economics of building new fossil-fuel baseload plants, it is unclear to what impact a ban on new fossil-fuel baseload generation would have on fossil gas field developers.

Question

10	What impact do you think a ban on new fossil-fuel baseload electricity generation will have on fossil gas field development?
11	What other issues or problems do you see in the implementation of a legislative ban on new fossil-fuel baseload electricity generation?

Recap of questions

Background

- 1 Do you agree that there is a low likelihood of new fossil-fuel baseload electricity generation plant being built? If not, why not?

Design and implementation issues

- 2 Do you agree that its preferable for investors looking to build a new fossil-fuel non-baseload generation plant not to have to apply for an exemption?
- 3 What size of new fossil-fuel baseload generation plant should be in scope of the ban?
- 4 Do you think that there should be an exemption for the replacement of existing baseload fossil-fuelled electricity generation with new fossil-fuel baseload plant of a prescribed efficiency and emissions standard?
- 5 Do you think that there should be an exemption for new baseload electricity generation plant that uses blended fuels (i.e., a mix of fossil-fuel and renewable fuel)?
- 6 Do you think that there should be an exemption for new fossil-fuelled co-generation plants?
- 7 Do you think there should be an exemption for new fossil-fuel baseload electricity generation plant with carbon capture, usage, and storage (CCUS)?
- 8 Do you agree that an exemption to relax restrictions on non-baseload fossil-fuel plant in a security of supply event is necessary?
- 9 Do you think there should be an exemption for the construction of new fossil-fuel baseload generation plants, based on security of supply reasons?
- 10 What impact do you think a ban on new fossil-fuel baseload electricity generation will have on fossil gas field development?
- 11 What other issues or problems do you see in the implementation of a legislative ban on new fossil-fuel baseload electricity generation?



Te Kāwanatanga o Aotearoa
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