To: Ministry for Business, Innovation and Employment (MBIE)
From: Todd Energy Limited, Nova Energy Limited

By email: gastransition@mbie.govt.nz

Date: 2 November 2023
Submission on Gas Transition Plan Issues Paper (Issues Paper)

Todd Energy Limited and Nova Energy Limited (together, Todd) welcome the opportunity to provide this feedback on the Issues Paper.

About Todd

Todd is one of New Zealand's largest family-owned businesses and has been part of business enterprise in New Zealand for over a century. Todd owns and operates key energy infrastructure and assets in New Zealand, and as New Zealand's only vertically integrated player in the gas transition, Todd has a unique perspective and a key role to play. Todd's brand, reputation and business have been built in New Zealand, and are tied to this country making Todd deeply committed to New Zealand and its future. New Zealand's transition to a low emissions future is Todd's transition too.

Further information about Todd is set out in Appendix 1.

1 New Zealand is not on track for a successful energy transition

Recent years have highlighted that meeting New Zealand's peak electricity demand is becoming increasingly challenging, which has been partly driven by a reduction in flexible resources. If New Zealand's energy transition is to be successful, natural gas will be needed to continue to play a key but declining role in providing firming and dry year cover.

This challenge has been evidenced in 2021 and 2022 when electricity blackouts were only avoided by the diversion of gas from contracted large commercial customers. New Zealand cannot continue to rely on the goodwill and presumed flexibility of large commercial gas customers to help 'keep the lights on'. In other words, New Zealand already has an energy shortage and without meaningful, substantive, stable and durable Policy/Regulatory change, then this is going to worsen.

High hydro inflows since late 2022, plus the scheduled outage of the Methanex methanol plants has meant that in 2023, New Zealand has had sufficient gas to meet demand. This situation is not sustainable however, and Todd fears a deteriorating level of energy security if proactive measures are not taken. Todd's view is that multiple measures are needed on both the demand and supply side.

Published analysis of forecast natural gas supply (excluding contingent resource) and demand indicates that New Zealand's natural gas production could fall below demand by 2027[1]. As

[1] MBIE Energy in New Zealand 2023 publication (MBIE Energy Publication), pg 38 (production)
Gas supply and demand projections, Concept Consulting, March 2022, pg 24 (demand)

discussed later in this submission, under current settings it is unlikely that New Zealand's contingent resource will be sufficient and available to meet the expected shortfall.

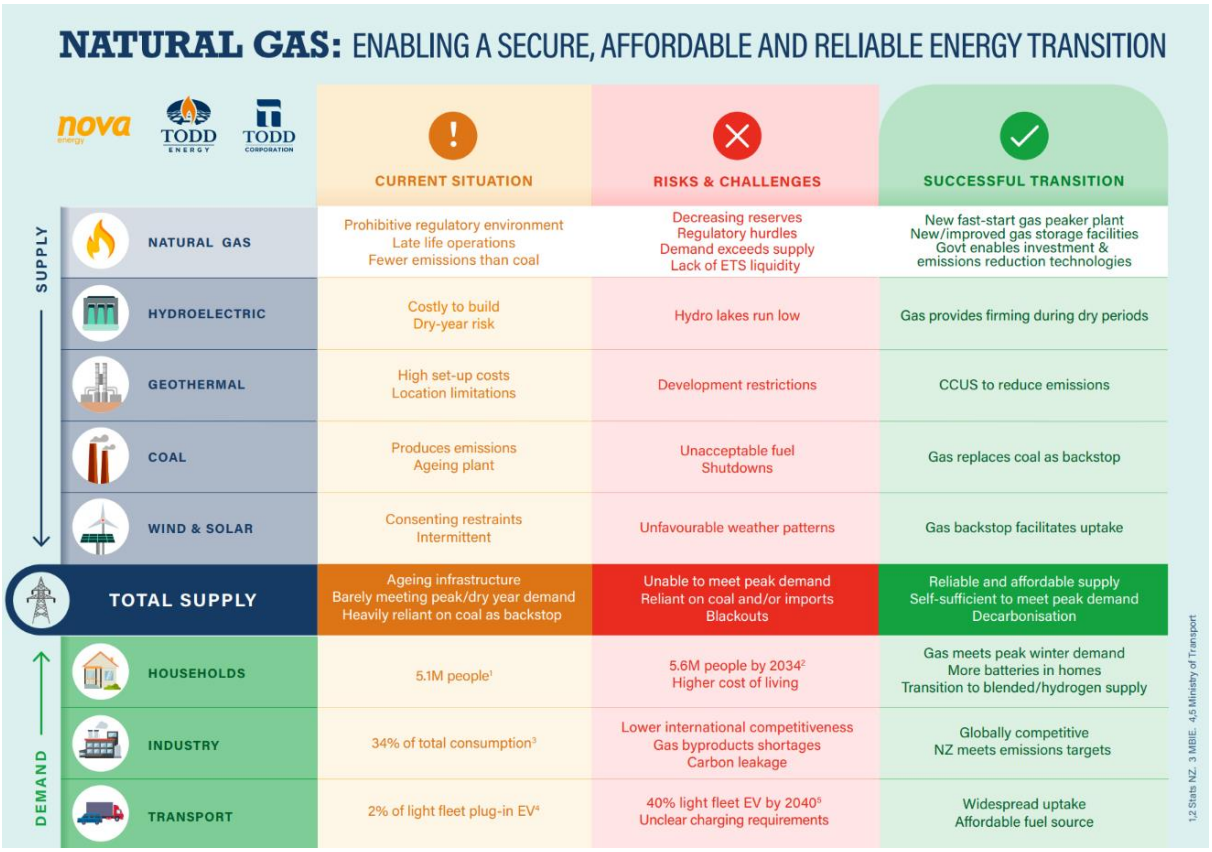
To move towards meeting New Zealand's short-term renewable energy targets while maintaining energy security, there is an urgent need to materially increase electricity generation of all kinds – wind, solar and gas fired peaker plants (Peakers).

In 2022, eighty-seven per cent of electricity generated in New Zealand came from renewable sources[2] and Boston Consulting[3] illustrated a pathway to ninety-eight per cent renewable by 2030. Transitioning the last few per cent will be difficult, expensive and will take time. In Todd's view, the focus for the short to medium term should be on electrification of the wider energy system, and this will in turn enable a transition to 100 per cent renewable electricity in the long term.

To ensure a secure and affordable transition, natural gas must remain a core (albeit naturally declining) component of the energy mix to support electrification and create a pathway to emissions reduction through to 2050, alongside other forms of energy. Multiple energy stack options need to be available and this includes allowing for LNG importation if needed until suitable alternatives are available.

Todd supports the creation of an actionable Gas Transition Plan that acknowledges the role of natural gas through New Zealand's energy transition.

Key risks and challenges and key elements of a secure energy transition are set out in the infographic below – also attached as Appendix 2.



[2] MBIE Energy Publication, pg 27

[3] The Future is Electric, a decarbonisation roadmap for New Zealand's electricity sector, key findings, 2022.

2 Contributing factors

The main contributor to the predicament of New Zealand's energy landscape is the lack of a durable and coherent policy framework which clearly outlines the role that the natural gas industry will need to play as New Zealand decarbonises. Commercial and technical factors are also significant contributors.

a) Unclear and inconsistent policy

An urgent change in Government narrative is needed around natural gas, acknowledging its role as a transition fuel, and providing a clear and stable pathway for the future of the industry. To provide assurance to investors and lenders and support ongoing investment in natural gas infrastructure and development, an actionable Gas Transition Plan that provides a clear and stable pathway for natural gas through New Zealand's energy transition is required immediately as a crucial part of the future policy landscape.

The Government target of "100 per cent renewable electricity by 2030" is an example of inconsistent policy. In Todd's view it is arbitrary, unachievable with no realistic plan attached to it and, most concerningly, it undermines New Zealand's ability to meets its 2050 emissions targets.

In addition to this, the target of 100 per cent renewable electricity by 2030 has created uncertainty and volatility within the energy sector, with implications that flow on to investors and funders, including banks and insurers. This also impacts New Zealand businesses and households as they pay higher electricity prices as a consequence.

Arbitrary and unclear targets and a strong anti-gas sentiment, have had a negative effect on investment in the sector, discouraging participation and limiting further access to natural gas. This should caution against decisions made without fulsome consultation or consideration. It also highlights the need for the Government to develop policy in partnership with the sector when putting in place other impactful regimes, such as the decommissioning regime under the Crown Minerals Act and draft guidelines, discussed below.

The NZ Battery Project has added further uncertainty to the energy sector and has eroded confidence in investment in new energy infrastructure, and in maintaining and further developing existing infrastructure.

The Gas Transition Plan provides an opportunity for the Government to provide clarity around projects or targets that are eroding confidence. In Todd's opinion, the 100% renewable generation target and the NZ Battery Project are counterproductive.

b) Commercial – lack of investor certainty

The Issues Paper acknowledges the need for ongoing investment in natural gas production. The constraints on the ability of the sector to invest, and the risk of underinvestment, have been highlighted by industry participants over a number of years[4]. Without certainty around supply of, and demand for, gas and with the difficulty in obtaining debt funding for fossil fuel related investment, it is currently not possible to build a business case to invest.

Nova Energy has resource consents that allow it to build up to 360 MW of Peakers. Todd is aware that the energy sector supports the development of new Peakers to replace ageing and retiring units and Todd concurs with Transpower, Boston Consulting Group and other stakeholders who have concluded that additional Peakers will be required in the future. However, a minimum of at least 10 years contracted gas supply is required to build a business

[4] For example, Gas Market Settings Investigation, Gas Industry Company 2021

case for investment. Given recent Government policy and narrative, there is currently no certainty around future contracts or the future supply of gas to supply additional Peakers, and therefore no business case. Government underwrite or other intervention will inevitably be needed to enable this much-needed investment to occur within the timeframe required.

We agree that natural gas storage is a useful tool to help balance supply and demand, and that investment in additional storage facilities is needed. If New Zealand is to gain the maximum value for its gas resources and maintain supply flexibility, then it must be given the confidence to develop further gas storage facilities, either repurposed, such as Ahuroa, or purpose built.

Confidence will only be gained where there is a supportive policy and enduring regulatory framework providing certainty that investment in gas storage is a viable commercial proposition, and that storage facilities can be created in a timely manner.

c) Technical – lack of gas reserves

While New Zealand needs natural gas as a transition fuel, New Zealand's gas reserves (including Todd Energy's) are being depleted as they are consumed. Proven plus Probable (2P) reserves were revised down by 332 petajoules (PJ) (17%) between January 2022 and January 2023[5]. As the quantity of gas declines, the cost of extracting it increases. There is still a need for ongoing investment in natural gas fields to ensure New Zealand has sufficient energy during the transition, but the economics are becoming difficult and unattractive.

Contingent Resources (2C), which by definition are currently uneconomic, provide estimates of quantities of natural gas in a field that may be extracted. Our view is that it is likely that only a small proportion of 2C resources will ever be extracted, given the current policy and regulatory settings, and commercial and technical risk. For gas field development to occur, there needs to be pre-contracted demand for the gas, or government support. Therefore, from a government energy planning perspective, the focus should only be on 2P reserves. Once development activities cease, it will generally not be feasible to recommence it.

d) Major regulatory challenges

Current regulatory settings are creating numerous challenges and obstacles – both for renewable energy and in the natural gas sector.

Decommissioning - Crown Minerals Act (CMA)

New Zealand needs a decommissioning regime that adequately balances minimising decommissioning risk with security of supply.

The CMA was amended in 2021 with the intention of mitigating the risk to the Crown and other third parties of having to carry out decommissioning activities. That stance, including the draft guidelines on Financial Capability and Financial Securities that will sit alongside, have materially contributed to the energy shortfall by locking up crucial funds that could be used to develop natural resources to ensure that there is sufficient natural gas for New Zealand homes and businesses to 'keep the lights on'.

Todd acknowledges the importance of permit holders properly decommissioning their assets, but we consider that the Government has over-reacted to Tamarind's failure, by placing a greater priority on decommissioning risk minimisation than on security of supply. The Government is not focussing on the right problem, and if it does not re-focus immediately, these overly onerous decommissioning obligations will exacerbate the situation.

[5] MBIE Energy Publication, pg35

Todd strongly recommends that the Government takes pause and considers the impact of the guidelines on New Zealand's security of supply before finalising the guidelines and commencing the financial security process.[6]

Resource Management Act (RMA)

New Zealand needs a supportive consenting framework to enable the delivery of electricity generating plant at pace, gas storage facilities and other emissions reduction technologies like Carbon Capture, Use and Storage (CCUS). Todd broadly supports the National Party sentiment to make the consenting regime more straightforward and allow consents to last longer.

The RMA is in the midst of radical change with the passing this year of legislation to replace the existing Act. We are concerned that the consenting process through the new legislation will make it impossible to build the required infrastructure: renewable and thermal generation, in the time frame required. The new regime is not yet in force, so is currently untested, but it is not expected to facilitate the fast-tracking of much needed energy infrastructure due to the ability for activist individuals or groups to stall the process through exercising appeal rights. The current RMA also presents considerable consenting process issues, including timing and appeal rights.

NZ Emissions Trading Scheme (NZ ETS)

It is Todd's view that a credible and well-functioning NZ ETS with an emissions cap aligned with New Zealand's emission budgets is the most effective tool for achieving New Zealand's emissions targets.

In Todd's view, a lack of liquidity in the ETS market, which is due to the market being driven by policy signals rather than by supply/demand fundamentals, is currently the key challenge.

This lack of liquidity is particularly concerning for entities that are active in the market for the purpose of meeting their compliance obligations. The primary cause of this lack of liquidity is ongoing regulatory and policy change within the NZ ETS and more generally, which is incentivising market participants to stockpile units.

A liquid secondary market supported by stable policy settings would encourage those holding surplus units to trade them and would enable market participants with NZ ETS compliance obligations to take a less conservative hedging position. As such, the immediate focus of the NZ ETS review should be on ensuring that the market has confidence in the durability of NZ ETS settings and on improving market liquidity.[7]

3 Risks of a disorderly transition

Todd agrees there is a substantial risk of a disorderly exit of New Zealand's natural gas sector in the absence of clear narrative for the role of, and workable transition plan for natural gas – creating a real risk that insufficient investment will be committed to bring gas reserves and contingent resources to market[8]. This would inevitably compromise security of supply of gas for electricity generation, as well as for major users and retail consumers.

[6] Detailed submissions are contained in the Todd Energy Limited submission to MBIE on Decommissioning Guidelines dated 29 September 2023

[7] Detailed submissions are contained in the Todd Corporation Limited submission to MBIE on the Review of the NZ ETS dated 11 August 2023

[8] As reported in the Gas Market Settings Investigation, Gas Industry Company 2021

a) Energy trilemma

A disorderly exit of natural gas would put real pressure on the energy trilemma (energy security, equity/affordability and sustainability) which would undermine both energy security and energy equity/affordability, as well as overall economic prosperity. It is likely that Kiwis will then face a real prospect of price escalation and brownouts/blackouts becoming a real prospect.

The liquid CO_2 shortage earlier in 2023 could be illustrative of the lack of gas security of supply without a supportive gas transition plan. That lack of security of natural gas and its by-products will have serious implications on the health and wealth of our nation.

Since the closure of the Marsden Point oil refinery in 2022, Todd Energy's Kapuni liquid CO_2 plant has been the only domestic supplier of liquid CO_2 in New Zealand. The liquid CO_2 supplied to distributors is a by-product of the production of natural gas at Kapuni. A safety issue at the Kapuni plant, along with global supply chain issues, led to a five-month shut down which affected domestic supply of liquid CO_2.

The flow on effect of this shut down affected multiple New Zealand industries, including brewing, agriculture, dairy, healthcare, food and water treatment.

A lack of domestic CO_2 supply drove prices for some users up 500% in a week as imported CO_2 can cost ten times as much due to shipping, overseas production costs and demand – and it has a much longer lead time and transport chain, often taking months to arrive in the country.

b) Deindustrialisation/further loss of international competitiveness

New Zealand is an exporting nation and as such it is vital the country remains competitive in international markets to ensure the transition does not jeopardise foreign direct investment, and the economic wellbeing of our communities. New Zealand must decarbonise, but not de-industrialise as this would allow countries with higher emissions production to meet global demand for our key exports like dairy, methanol, steel and aluminium.

We need a transition framework that does not put New Zealand at a competitive disadvantage causing de-industrialisation, and that recognises that keeping New Zealand's major industries onshore is more beneficial to global CO_2 emissions than seeing those businesses move to lower cost countries reliant on coal fired generation and where coal would be used as fuel/feedstock.

If major users of gas do not have certainty that gas will be available and are unable to operate or are forced to leave New Zealand, then this materially impacts New Zealand local industries as well as GDP and New Zealand's ability to compete in the international market.

Methanex provides foundational demand for gas in New Zealand, and therefore assurance to the gas producer to extract the gas. Methanex also provides demand side (battery like) flexibility and contributes towards certainty of demand needed for producers to commit to future development. Without Methanex, the demand for/use of gas would become a lot more volatile, and further development would become much harder to justify.

c) Impact on Taranaki region

Given the concentration of gas assets, and predominance of large gas consumers in the Taranaki region, any negative impact will be felt disproportionately in that region – with serious negative economic impact and impacts on the prosperity and social structure of communities and individuals.

It is estimated that a disorderly transition could reduce real GDP by tens of billions of NZD, based on 2019 analysis of the impact of ending new offshore exploration permits[9]. The impacts on regional consumption, investment and export revenue would also be strongly negative. Households in Taranaki would inevitably see a substantial reduction in their standard of living. Job losses within the sector and within Taranaki would be severe, forcing people to move outside the region for work.

Any negative impact is not limited to the oil and gas sector. The reduction in the nominal gross value added by the oil and gas industry to other sectors in Taranaki as a result of a disorderly transition would also be material.

d) Reliance on imported fuels

New Zealand's natural gas prices have historically been delinked from global oil prices, giving them a competitive energy cost advantage. In the absence of a reliable domestic gas sector, New Zealand would need to rely on imported energy sources such as pellets, biomass, coal, or LNG to cover for low hydro inflows or peak electricity demand. It is Todd's view that, given the predicament of New Zealand's energy landscape, there is a need to be open to the potential to import LNG in order to achieve security of supply, particularly if gas storage proves to be insufficient.

4 What is needed for orderly transition

We agree that a key challenge for the gas sector is not just about reducing emissions, but about the evolving role of gas in supporting the wider energy transition and the New Zealand economy. The Gas Transition Plan is an important step in outlining that role and ensuring New Zealand's transition is orderly. To be fit for purpose the Gas Transition Plan will require the following:

a) Supportive, clear, stable and durable policy framework

The Terms of Reference for the Gas Transition Plan include establishing "realistic, but ambitious, transition pathways for the fossil gas sector to decarbonise". To decarbonise, New Zealand needs a supportive, clear, stable and realistic policy framework that positively acknowledges the long-term role of natural gas as a transition fuel. The framework needs to be able to prevail across election cycles and be supported by realistic science-based targets that align with international frameworks and practices.

These frameworks need to be underpinned by a narrative from key stakeholders, starting with Government, that specifically acknowledges that it will be natural gas that enables a secure transition to occur in New Zealand. This will help rebuild confidence in the sector and attract partners/investors.

This would also encourage on-going industry and Government collaboration and enable stakeholders to share sector knowledge and input into complementary workstreams and strategies to support the transition to a net-zero future.

b) Regulatory regime supporting transition

New Zealand needs a regulatory regime that is aligned to the Gas Transition Plan and therefore supports the transition. The regime needs to be broad and flexible, enabling

[9] Based on estimates in "Economic impact of ending new oil and gas exploration permits outside onshore Taranaki A regional CGE analysis NZIER report to PEPANZ February 2019"

necessary infrastructure to be consented within significantly shortened timeframes, with limited appeal rights.

Regime needs to be technology agnostic

New Zealand should seek guidance from and collaboration with the rest of the world. It should remain technology agnostic, letting the market find the best and least cost most efficient solution, enabled by Government policy and regulation.

Todd sees alternative fuels, including biogas and hydrogen, as an important part of the energy mix. Support is needed to enable them to come on stream faster, and as economically as possible. Regardless, it will take some time to develop biogas/hydrogen (and will require additional electricity generation) and there is a need to ensure there is sufficient natural gas to cover the supply gap as New Zealand transitions between the two.

CCUS to be supported

Transition technologies, like CCUS, can help provide opportunities for fossil fuel reliant sectors to reduce gross emissions and meet climate goals.

Todd Energy is at the early stages of assessing CCUS projects that could reduce New Zealand's emissions. There is a strong case for using proven technology to inject and store CO_2 within depleted gas fields. These fields have proven trapping capability as they have retained natural gas over millions of years. The oil and gas sector has invested hundreds of millions of dollars to collect data and characterise these fields and has the expertise to manage and conduct CCUS operations in a safe manner.

It is not yet clear whether CCUS is going to be economic for New Zealand. Given the decline of New Zealand's natural gas production it is imperative that CCUS projects underpinned by gas processing become operational quickly, otherwise there will be insufficient remaining CO_2 to make projects commercially viable.

To justify further investment in CCUS technology Todd needs, within the next 12 months, confidence in the role of gas beyond 2030 and clarification of the regulatory framework. Other commercial and technical factors would still need to align before an investment decision could be made.

Long-term regulatory certainty is also needed. Consideration needs to be given to how the permitting regime interacts with sequestration activities, and how the activities interrelate with decommissioning requirements and security, and end of field life liability.

Consideration needs to be given to whether third parties should be able to sequester their CO_2 in depleted hydrocarbon fields. For third party storage to be feasible, the ETS needs to enable removal activities in the next 12 months. Otherwise, the infrastructure to support it, underpinned by gas production and processing, will not be developed. The ETS regime does not currently provide incentive for third parties to sequester their CO_2. Therefore, ETS settings must also be modified to allow credit for CCUS removal activities.

c) Potential Government underwrites

Given the extent of Government policy and regulatory change across election cycles, and the impact it can have on making investment uncertain or uneconomic, the Government should consider supporting investment in energy assets by underwriting long term gas supply contracts, and also underwriting the risk of future Government policy or regulatory changes materially negatively impacting the economics and overall viability of such investments. To be clear, Todd is not seeking subsidies, but a level of assurance around the policy and regulatory settings.

Todd would welcome the opportunity to partner with Government and other stakeholders to find the best way forward for a secure transition.

Todd's responses to specific MBIE questions are attached to this letter as Appendix 3.

Appendix 1 - About Todd

1. **Who we are**

- Todd Corporation is one of New Zealand's largest family-owned businesses. We've been around for over a century, and own and operate key energy infrastructure and assets in New Zealand.
- Today Todd has over 1,000 employees, with investments in energy, minerals, property, healthcare and technology.
- We operate under three main business units – Todd Energy, Nova Energy, and Todd Capital.
- The core focus of Todd Energy and Nova Energy is to provide affordable and reliable energy to all Kiwi households and businesses. We're a key part of New Zealand's energy system, keeping the lights on for both households and industry.
- Todd Capital is our vehicle for diversifying our investment beyond the energy sector.
- The Todd Foundation, one of New Zealand's oldest foundations, funds work to change systems through long-term partnerships with communities, groups and collectives.

2. **What we do**

Protect the core, stimulate future opportunities

- Our core business is providing energy for Aotearoa New Zealand. We remain committed to our core energy assets, but we're also focused on opportunities for renewal and improvement to ensure our business is sustainable into the future.

Todd Energy

- Produces around one third of the country's natural gas from its onshore natural gas fields at Kapuni, McKee and Mangahewa, and through its 26% interest in the offshore Pohokura natural gas field.
- Natural gas makes up more than 20% of New Zealand's primary energy supply, providing households with instant heat, energy and continuous hot water. Natural gas is also used commercially to heat and power businesses and as a feedstock for methanol and urea production.

Nova Energy

- Is a generator-retailer and a 100% owned subsidiary of Todd Corporation.
- Provides a bundled offering of power, gas, broadband and mobile, and supplies over 85,000 homes and businesses with electricity. Is one of the largest wholesalers of natural gas and retails to over 35,000 customers.
- Is the second largest wholesaler of natural gas in New Zealand, and supplies all of Fonterra's natural gas in the North Island.

Todd Capital

- Invests across a range of sectors, which include:
- Healthcare - Integria Healthcare supplies natural healthcare products to New Zealanders and consumers around the world. Property – Todd Property designs and delivers large commercial and residential projects in Auckland.
- Automotive – we're the largest shareholder in Parts Trader, an online marketplace for automotive parts.
- Minerals – Todd Minerals manages investments in a number of international projects.

Appendix 2

Infographic - attached

NATURAL GAS: ENABLING A SECURE, AFFORDABLE AND RELIABLE ENERGY TRANSITION

nova energy · TODD ENERGY · TODD CORPORATION

	CURRENT SITUATION	RISKS & CHALLENGES	SUCCESSFUL TRANSITION
SUPPLY — NATURAL GAS	Prohibitive regulatory environment Late life operations Fewer emissions than coal	Decreasing reserves Regulatory hurdles Demand exceeds supply Lack of ETS liquidity	New fast-start gas peaker plant New/improved gas storage facilities Govt enables investment & emissions reduction technologies
SUPPLY — HYDROELECTRIC	Costly to build Dry-year risk	Hydro lakes run low	Gas provides firming during dry periods
SUPPLY — GEOTHERMAL	High set-up costs Location limitations	Development restrictions	CCUS to reduce emissions
SUPPLY — COAL	Produces emissions Ageing plant	Unacceptable fuel Shutdowns	Gas replaces coal as backstop
SUPPLY — WIND & SOLAR	Consenting restraints Intermittent	Unfavourable weather patterns	Gas backstop facilitates uptake
TOTAL SUPPLY	Ageing infrastructure Barely meeting peak/dry year demand Heavily reliant on coal as backstop	Unable to meet peak demand Reliant on coal and/or imports Blackouts	Reliable and affordable supply Self-sufficient to meet peak demand Decarbonisation
DEMAND — HOUSEHOLDS	5.1M people[1]	5.6M people by 2034[2] Higher cost of living	Gas meets peak winter demand More batteries in homes Transition to blended/hydrogen supply
DEMAND — INDUSTRY	34% of total consumption[3]	Lower international competitiveness Gas byproducts shortages Carbon leakage	Globally competitive NZ meets emissions targets
DEMAND — TRANSPORT	2% of light fleet plug-in EV[4]	40% light fleet EV by 2040[5] Unclear charging requirements	Widespread uptake Affordable fuel source

1,2 Stats NZ. 3 MBIE. 4,5 Ministry of Transport

Appendix 3

Todd Energy Limited and Nova Energy Limited (together, Todd) submission: Gas Transition Plan issues paper

Question	Response
Transitioning our gas sector	
How can New Zealand transition to a smaller gas market over time?	New Zealand can effectively transition to a smaller gas market by: ○ ensuring that the use of natural gas reflects the cost of CO_2-e emissions, and ○ maintaining policies that facilitate the adoption of technologies that replace the use of natural gas. The most critical element in achieving a reduction in gas demand in a way that is not disruptive to the economy is to ensure that electricity costs are minimised. Electricity is going to be the key alternative to natural gas, either directly, or via the production of hydrogen for application as a fuel or industrial raw material input. Until there are new options for meeting peak electricity demand and cover for dry hydro sequences, gas-fired generation capacity remains critical to ensuring the lowest possible electricity prices. In a back-up role, thermal generation will still only represent a small (<5%) proportion of overall electricity generation over the long run. Gas fired peaker plants (Peakers) will however require flexible gas supplies if they are to provide the necessary level of security of supply. Key to maintaining gas supply flexibility, while at the same time ensuring an orderly decline gas production capacity will be: ○ retaining the industrial demand for gas as a raw material, e.g. for production of methanol and fertiliser, ○ either expanding gas storage capability, or providing for the importation of LNG (noting that LNG importation is not Todd's preferred option), and ○ having a stable, enduring and predictable investment environment that acknowledges the role of natural gas. For hard to abate sectors that are reliant on natural gas, the speed at which lower emissions options (e.g. carbon capture, use and storage (CCUS), hydrogen) become commercially viable at scale is uncertain. The market, via emissions pricing, is designed to facilitate this as it will do so in manner that is economically efficient. Government can support this process by removing market barriers and ensuring that the market can have confidence in the permanence of the core architecture of the NZ ETS

Question	Response
What is needed to ensure fossil gas availability over the transition period?	To support ongoing investment in natural gas infrastructure and development, an actionable Gas Transition Plan that provides a supportive, clear and stable pathway for natural gas through New Zealand's energy transition is required immediately as a crucial part of the future policy landscape. Gas production requires continual maintenance expenditure on production facilities and reworking or replacement of production wells. Oil and gas exploration and production is a high-risk business and even wells drilled into established gas fields can produce disappointing results. Given the magnitude of expenditure required on an ongoing basis, producers need to have confidence that their investments will yield attractive returns over the long run, thereby justifying the high upfront expenditure and offsetting the less successful outcomes. It is therefore critical to ongoing investment in gas field developments that Government policies recognise the key role of gas and enable the industry to make commercial investments without risk of policy changes making those investments uneconomic. The impact of the ban on new offshore gas exploration on investor confidence and interest in New Zealand from international oil exploration companies has been well canvassed. The 100% renewable electricity generation target (by 2030), and the NZ Battery Project have had a similar depressing effect on prospective thermal generation developments. A regulatory regime that supports transition is also needed. This includes improvements to the consenting regime to enable infrastructure to be consented more quickly, and a decommissioning regime that adequately balances minimising decommissioning risk with security of supply. Given prior experience, parties may require an underwrite from Government for new investments to the extent that future policy developments or regulatory changes materially negatively impact the economics and overall viability of such investments. The Gas Transition Plan has an important role to play in building bipartisan support so that such decisions can be made in an evidence-based manner and are not unduly politicised.
What factors do you see driving decisions to invest or wind down fossil gas production?	The gas price, the carbon price, and confidence in continuing demand will be the primary drivers to maintain production capability. Demand will be dependent, to a degree, on the future make-up of the New Zealand economy, specifically, recognition that keeping New Zealand's major industries onshore is more beneficial to global CO_2-e emissions than seeing those businesses move to lower cost countries reliant on coal fired generation and coal-based gas. In addition, greater clarity around the transitional role of natural gas will help underpin investor confidence in options such as CCUS and renewable gases. Recognition of the continuing role of gas in supporting the electricity market and keeping electricity prices lower will lift investors' confidence.

Question	Response
	With confidence in the market, gas production will respond to demand within the scope of the timeframes required to plan for and deploy resources to maintain production. As those resources run down however, they become difficult to replace as contractors and drilling equipment and the associated expertise are withdrawn from the market. Different gas fields have different drivers due to the nature of the gas reservoir, location (offshore or onshore), remaining reserves and overheads associated with continuing operation. It is therefore exceedingly difficult to point to specific issues or offer a simple solution to incentivise continuing production.
Does the Government have a role in enabling continued investment in the gas sector to meet energy security needs? o If yes, what do you see this role being?	In Todd's view, the Government has a key role in enabling continued investment in the gas sector. However, it does not need to invest directly in or subsidise the gas or electricity sectors to meet energy security needs so long as the private sector can be confident that it is operating in a normally competitive market where capital will be applied on a rational basis. Government imposed costs extraneous to the market, such as the emissions trading scheme or environmental standards, are accepted as market risks so long as they can reasonably be anticipated as being introduced on a rational basis and therefore be taken into account when considering investment risks. The 100% renewable electricity target and NZ Battery Project do not meet these criteria. An urgent change in Government narrative is needed around natural gas, acknowledging its role as a transition fuel, and providing a supportive, clear and stable pathway for the future of the industry. Investors will need some form of assurance that the economic life of major projects is not going to be cut short by Government decisions impacting on the use of gas in electricity generation. This may mean the Government needs to underwrite the risk that future policy developments or regulatory changes materially negatively impact the economics and overall viability of such investments.
Does the Government have a role in supporting vulnerable residential consumers as network fossil gas use declines? o If yes, what do you see this role being?	Yes. The gas market cannot sustain the gas distribution businesses continuing to receive a full rate of return on sunk investments, and thereby pushing up the fixed costs of gas supply to low users to unsustainable levels. Vulnerable consumers then become trapped between high fixed charges for gas, and a high capital cost to switch away from gas. In Todd's view, the Government needs to overturn the Commerce Commission's decision to allow the gas distribution businesses to apply accelerated depreciation under Part 4 of the Commerce Act. Otherwise the fixed costs of gas supplies will become excessive for those that cannot afford it.

Question	Response
Gas and electricity	
What role do you see for gas in the electricity generation market going forward?	To ensure a secure and affordable transition, natural gas must remain a core (albeit naturally declining) component of the energy mix to support electrification and create a pathway to emissions reduction through to 2050, alongside other forms of energy. Since the 1980's the electricity market has relied on gas and coal to meet peak electricity demand and back-up when hydro inflows have meant falling reservoir levels. Coal may be replaced by wood pellets in the Huntly Rankine units, but gas-fired generation will continue to have an important role until the intermittency of wind and solar and dry hydro sequences can be covered by alternative technologies. As more renewables are built, new battery technologies emerge and are built and demand response capability is much expanded and automated, there will remain a role for the existing fast-starting gas-fired generation or Peaker plants and, potentially, new Peakers. Because it is not clear what combination of technologies will adequately cover the intermittency of renewable energy supplies and volatility of demand, gas is by far the lowest cost and most secure option in the interim. There is also potential for natural gas to be replaced by renewable fuels in Peaker plants in the longer term.
What would need to be in place to allow gas to play this role in the electricity market?	Investors in gas-fired generation need certainty that they will not be arbitrarily shut down by specific Government actions or policy changes. Risks such as penalties over and above the ETS on gas costs, subsidies for alternative generation technologies, or restrictions on maintaining gas deliverability (including further restrictions on gas exploration and development) all make investment in new Peakers untenable. In order for Peakers to be built and maintained they must have an adequate supply of fuel for which the cost does not lead to affordability issues in the electricity market while there are no cost-effective alternatives. Refer to response above to "What is needed to ensure fossil gas availability over the transition period?". To address these concerns, the Government could consider underwriting specific risks that investors face that are beyond usual commercial risks and that are under the Government's direct control.
Do you think gas can play a role in providing security of supply and/or price stability in the electricity market? o Why / Why not?	Yes. Gas supply has been the preferred provider of firming for renewables for decades and to date no practical and cost effective alternative has been identified. The NZ Battery Project team has identified alternatives but none can be achieved in the short to medium term that compare well on price or on flexibility. Even the Labour Government's benchmark solution, in the form of the Lake Onslow pumped hydro storage scheme, would not be available before 2037 and at a cost of some $16B. This is four times the cost that the Interim Climate Change Commission estimated that it would cost when it

Question	Response
	recommended that the scheme be investigated for technical and economic feasibility. Even at a cost of $4B, the carbon abatement cost of the project was estimated to be $250/T CO_2-e. Further evidence can be found in the recent experiences in other parts of the world such as in Europe, which is experiencing energy shortages due to the war in the Ukraine, and in Australia. In both cases natural gas and Peakers are being developed in combination with renewables to support system stability. For natural gas to continue to play a role in maintaining New Zealand's electricity security of supply and affordability, and with least emissions, Government policy risks to future developments need to be removed.
Do you see alternative technology options offering credible options to replace gas in electricity generation over time? o Why / Why not?	New Zealand's transition to a low emissions economy is underpinned by the electrification of the economy. This will only occur if New Zealand has an affordable and reliable electricity system. New Zealand risks jeopardising its transition if it phases out gas electricity generation before alternative options are both credible and affordable.
If you believe additional investment in fossil gas infrastructure is needed, how do you think this should be funded?	Yes, ongoing natural gas development and natural gas electricity generation has an important role to play in the transition to a low emissions future. As the quantity of gas declines, the cost of extracting it increases. This means there is still a need for ongoing investment in natural gas fields to ensure sufficient supply during the transition. Published analysis of forecast natural gas supply (excluding contingent resource) and demand indicates that New Zealand's natural gas production could fall below demand by 2027. Without further investment in natural gas supply there is a risk that natural gas supply declines at a rate that is damaging to the New Zealand economy, resulting in a disorderly, rather than orderly, transition. Additional investment should be provided entirely by the private sector. The key to enabling that investment is clear and stable policy which will bring investor confidence, as discussed above. If the Government can underwrite the longer term risk of projects being displaced by Government decisions on projects such as the NZ Battery Project, then the Government should gain a positive payback in terms of lower electricity prices and reduced CO_2-e emissions overall.
Renewable gases and emission reduction technologies	
On a scale of one to five, how important do you think biogas is for reducing emissions from fossil gas?	5 Biogas is an important part of the energy mix, and early learnings are likely to lead to improved economics and commencement of projects that will improve biomass and waste recovery in the future. Biogas is still only likely to be a relatively small contributor to overall total gas volumes, but it could be

Question	Response
○ Why did you give it this rating?	critical to enabling consumers to avoid replacing all of their gas appliances, i.e. the capital saving will be very significant.
Do you see biogas being used as a substitute for fossil gas? ○ If so, how?	Yes, in domestic applications where the capital cost of switching from gas to electricity is seen to be too expensive until at least the end of the economic life of major appliances like gas central heating or water heaters.
Hydrogen	
On a scale of one to five, how important do you think hydrogen is for reducing emissions from fossil gas use? ○ Why do you think this?	5 Although hydrogen is considerably more expensive to produce via hydrolysis versus natural gas reforming, if it can be produced cheaply enough then New Zealand stands to be able to retain methanol, urea, and steel production over the long term on an internationally competitive basis. Another potential avenue for producing hydrogen in the interim is by enabling the production of blue hydrogen using gas reforming and CCUS. This would help develop a domestic market for hydrogen which could transition to green hydrogen over time, however limited gas supplies might mean that those projects cannot cover their capital costs before the value of gas for other purposes gets too high.
Do you see hydrogen being used as a substitute for fossil gas? ○ If so, how and when?	Not in the short or medium term, except perhaps in some specialist applications where high temperature heating is critical. Hydrogen has more important applications where gas is not currently used, e.g. for fuel cells where energy density is important. Green hydrogen is at the early stage of the commercialisation pathway so its role is likely to be niche across the time frame that the Gas Transition Plan covers, but could potentially play a bigger role in New Zealand's Energy Strategy (as per the above answer).
What else can be done to accelerate the replacement of fossil gas with low-emissions alternative gases?	The cost of distributing low-emissions alternative gases needs to be kept to a minimum, and consumers need to have confidence in knowing the reduction in emissions versus natural gas is genuine.
Renewable gas trading	
On a scale of one to five how important is a renewable gas trading to supporting the uptake of renewable gases? ○ Why have you given it this rating?	1 Until such time that there are multiple parties with a significant commercial interest in trading renewable gas then the market is best left to pioneers who are prepared to build the market and expose consumers to the concept. If gas traders cannot lock in a secure supply of renewable gas for a reasonable length of time, then they cannot assume they will gain a return on their investment by building up a market for

Question	Response
	the product. As the market develops, there will be opportunity for other retailers to enter the market on the back of the initial development work. Further clarification is required as to how certification would work as the market for renewable gases grows. Initially the market is likely to be dominated by a few processes (e.g. biogas from landfills and anaerobic digesters). However, over time the range of ways renewable gases are generated will grow (e.g. green hydrogen). Consideration is required as to whether the intention of renewable gas certification is to support renewable gases (in which case the emissions footprint of the product is likely to be irrelevant to the customer) or to support emissions reductions (in which case the emissions footprint is fundamental to enabling the customer to calculate the emissions benefit of the product versus status quo, and non-renewable gases such as blue hydrogen would need to be included). From an emissions perspective, renewable gas certification will likely need to be treated differently from renewable electricity certification. This reflects that purchase electricity is a Scope 2 emissions source and a market-based reporting methodology can be used for the associated emissions. In contrast, in the use of purchased renewable gas carbon emissions are to be reported separately from scopes or categories. In the case of biogas where there will be combustion of carbon, there is no definitive guidance on how the embedded emissions should be treated under the GHG Protocol. The GHG Protocol are looking at this issue and the outcome of this process will provide further guidance as to the appropriate role for renewable gas certification.
What role do you see for the government in supporting such a scheme?	The Government needs to ensure that consumers can rely on retailers' claims that any renewable gas that they purchase at their point of connection to a gas distributor's pipeline is matched exactly by renewable gas injected at a remote injection point. The reconciliation and audit requirements may be administered by the private sector, but licensing and auditing must be mandatory and overseen by appropriate regulation. A separate issue will be how to ensure that renewable gas is not unintentionally double counted, e.g. if a customer purchases renewable gas but doesn't claim the associated renewable certificates then the producer of the renewable gas should be unable to claim and sell the associated renewable certificates to a different customer. In this scenario both customers might be expecting to avoid the NZ ETS costs associated with the use of natural gas but, clearly, only one customer can do so.
Carbon Capture, Utilisation And Storage	
On a scale of one to five how important do you think CCUS is for reducing emissions from fossil gas use? o Why did you give it this rating?	5 CCUS is proven technology that is already in use overseas to reduce emissions. The *Global CCS Institute* records that operational CCS projects in 2022 had the capacity to store 43 million tonnes of CO_2 per year, with over twice that capacity in either construction or advanced development.

Question	Response
	In New Zealand, sequestration in depleted hydrocarbon fields could be quickly implemented to reduce emissions from gas processing and other industrial sources. Emissions from gas processing in New Zealand were ~0.3 million tonnes per year in 2021.[1] Given declining gas reserves in New Zealand, the speed at which CCUS can be implemented will determine the commercial viability; the high cost of capturing emissions from gas processing (tens of millions of dollars) can only be justified with enough remaining gas reserves to drive down the cost (reducing $/tonne). In addition, a stable carbon price and certainty in the ETS settings is required to provide investors' confidence that a project is financially viable. Although it is not clear yet whether CCUS is going to be economically feasible in New Zealand, it is critical that the Government demonstrates active support to provide confidence to parties investigating this technology.
What are the most significant barriers to the use of CCUS in New Zealand?	Government support and regulatory certainty. CCUS is capital intensive and investors want confidence that there is fit for purpose regulation and that these regulations are durable. Investors want confidence that there won't be policy changes during the life of the project that would make the investment uneconomic. Specifically, for CCUS to capture gas processing emissions: • **Bipartisan Government recognition and support for the use of gas as a transition fuel.** CCUS investors will want certainty that they can produce the remaining gas reserves that underpin a gas processing capture project. • **Stable ETS settings.** CCUS project commerciality is underpinned by the forecast NZU price. Historically this has been volatile in New Zealand and stability in the ETS settings is required to provide investor confidence. • **Certainty in storage regulations**. There is ambiguity in whether dedicated CCUS regulations are needed (Barton report, 2013) or whether there is sufficient comfort under the existing RMA framework (Barton report, 2023) to regulate CO_2 storage. An indication of Government direction is required as soon as possible, and should additional CCUS regulation be required it is important that this is fit for purpose, provides certainty and is implemented with urgency. Every year of delay makes gas processing CCUS projects less commercially viable. • **Enable NZU credits for removal activities.** Consideration needs to be given to whether third parties should be able to sequester their CO_2 in depleted hydrocarbon fields. Gas processing capture may be able to underpin CCUS projects, but there is currently no incentive to store third party gas. Changing these settings could help support the commercial viability of CCUS projects and provide a pathway to further industrial emissions reductions.

[1] 'Time series emissions data 1990 to 2021 from New Zealand's Greenhouse Gas Inventory published in 2023, MfE

Question	Response
	Given declining gas reserves in New Zealand the speed at which gas processing CCUS projects can be progressed may also be a barrier to implementation. The regulatory framework needs to be clear within the next 12 months.
Do you see any risks in the use of CCUS?	Technical risks are low and can be managed through the existing framework of regulations. The oil and gas industry has over 50 years of experience extracting, processing, and reinjecting gas and water in New Zealand. It has invested hundreds of millions of dollars to collect data and characterise subsurface hydrocarbon accumulations. It has the expertise to minimise project risk and conduct CCUS operations in a safe manner. Hydrocarbon fields in Taranaki were filled with oil and gas millions of years ago and so have proven trapping capabilities. The fields have been depressured through production and so have ample capacity for storage. For example, in 2009 *GNS Science* estimated a fully depleted Kapuni field would have a storage capacity of ~100 million tonnes CO_2. Some sites are more suitable than others, but there is enough data and technical understanding of depleted hydrocarbon fields to select the best locations within Taranaki. Subsurface CO_2 injection and storage verification can be monitored using technology that has already been used in New Zealand and is employed by CCUS projects worldwide. It is possible that a small proportion of CO_2 might leak from the storage structure over time. Minor leakage is not catastrophic, it merely means that the CO_2 escaping must be accounted for should it reach the atmosphere, and equivalent amounts removed from other sources to compensate. The risk of minor leakage needs to be weighed against the risk of status quo, which in the New Zealand context results in CO_2 entering the atmosphere directly.
In what ways do you think CCUS can be used to reduce emissions from the use of fossil gas?	CCUS can be used to reduce the emissions from gas processing. CO_2 is already removed at several gas processing facilities to meet New Zealand gas specifications, and this could be injected underground and stored. CCUS could also enable continued use of gas-fired electricity generation for a number of decades at least, particularly if it enabled further gas development. It may also have a role in reducing emissions from large-scale industrial processes such as methanol production or blue hydrogen generation.
Options to increase capacity and flexibility of gas supply	
What role do you see for gas storage as we transition to a low-emissions economy?	Todd saw the value in gas storage and through Nova made a substantial commitment to purchase capacity from Flexgas Limited. Unfortunately, the Ahuroa gas storage facility has under-performed due to unforeseen technical factors. Gas storage is necessary because much of the gas in Taranaki is sourced from tight semi-permeable sands that do not perform well with variable offtake.

Question	Response
	The benefit of gas storage to New Zealand is that it: ○ Can cover gas production maintenance outages, ○ Helps cover seasonable peak demand, ○ Stores gas when major users have outages, ○ Meets the requirement for weekly and intra-day flexibility to maintain transmission pipeline pressures, ○ Delivers gas to meet variable gas demand for Peakers. Expanded gas storage can help deliver all those benefits, as well as contribute to covering for dry hydro sequences.
On a scale of one to five, how important do you think increasing gas storage capacity is for supporting the transition? ○ Why did you give it this rating?	5 Increasing flexible gas storage will enable the life of New Zealand's gas fields to be extended in support of flexible gas-fired generation. Because it reduces the probability of requiring imports of LNG at some future time there will be an economic payback from putting off that capital investment, as well as ensuring New Zealand can maximise the value from its own gas resource through royalties, employment, and economic development.
What should the role for government be in the gas storage market?	The Issues Paper notes that it is expected that a buyer of storage capacity would require a commitment of at least 15 years. That would be the term required to amortise the cost of the capital investment and to gain a reasonable return on capital. The funds to develop and support such a gas storage facility should be available from the private sector provided that policy and regulatory settings are supportive. A feature of gas storage is that a substantial amount of gas needs to be retained within the gas storage field to maintain practical operating pressures. This 'pad gas', as it is referred to, itself represents a significant investment. The Government could reasonably provide some relief by deferring royalties on that gas until such time it is extracted, or even take ownership of the pad gas, as the Government's cost of capital is substantially lower than that of parties invested in the gas sector. The Government should not be required to assume any risk on the economic or technical performance of a gas storage project, but it could be necessary to take on an obligation to buy-out the participants if it imposes policies before the 15 year payback period is complete that makes the gas storage facility redundant, e.g. by acting to close down gas-fired generation plants or other major gas customers, or deliberately limiting the development of existing or new gas fields.

Question	Response
Liquefied Natural Gas (LNG)	
Our position is that LNG importation is not a viable option for New Zealand. Do you agree or disagree with this position? ○ If so, why?	Todd has not directly evaluated the financial viability of LNG importation but is surprised at the expected costs to develop infrastructure. Irrespective, it makes sense to fully utilise New Zealand's own gas resources before investing substantial funds to import LNG. However, it is Todd's view that, given the predicament of New Zealand's energy landscape, there is a need to be open to the potential to import LNG in order to achieve security of supply, particularly if gas storage proves to be insufficient. Establishing an LNG import capability would also give confidence to domestic suppliers that demand for gas will continue to support an appropriate level of exploration and development activity in NZ.
What risks do you anticipate if New Zealand gas markets were tethered to the international price of gas?	Linking the gas market to the international price of LNG would expose New Zealand and New Zealand industry to the volatility of international natural gas pricing and supply. At present there is a major cost implication associated with imported LNG but it also needs to be recognised that as New Zealand's gas fields mature, the cost of maintaining gas flows as well as supporting fixed operating costs is going to lead to increased costs and gas prices over time. These could lead to domestic gas prices exceeding of the marginal cost of LNG eventually.