SUBMISSION ON

Advancing New Zealand's energy transition

02 November 2023

To: Ministry of Business, Innovation and Employment
Name of Submitter: Horticulture New Zealand
Supported by: NZ Asparagus Council, Potatoes NZ, Process Vegetables NZ, Summerfruit NZ

Horticulture™ New Zealand
Ahumāra Kai Aotearoa

OVERVIEW

Submission structure

1. **Part 1:** HortNZ's Role
2. **Part 2:** Gas Transition Plan
3. **Part 3:** Electricity Market Measures
4. **Part 4:** Interim Hydrogen Roadmap

Our submission

Horticulture New Zealand (HortNZ) thanks the Ministry of Business, Innovation and Employment for the opportunity to submit on the Consultation on advancing New Zealand's energy transition and welcomes any opportunity to continue to work with the Ministry of Business, Innovation and Employment and to discuss our submission.

The details of HortNZ's submission and decisions we are seeking are set out in our submission below.

PART 1

HortNZ's Role

Background to HortNZ

HortNZ represents the interests of approximately 4,200 commercial fruit and vegetable growers in New Zealand who grow around 100 different fruit, and vegetables. The horticultural sector provides over 40,000 jobs.

There are approximately 80,000 hectares of land in New Zealand producing fruit and vegetables for domestic consumers and supplying our global trading partners with high quality food.

It is not just the direct economic benefits associated with horticultural production that are important. Horticulture production provides a platform for long term prosperity for communities, supports the growth of knowledge-intensive agri-tech and suppliers along the supply chain; and plays a key role in helping to achieve New Zealand's climate change objectives.

The horticulture sector plays an important role in food security for New Zealanders. Over 80% of vegetables grown are for the domestic market and many varieties of fruits are grown to serve the domestic market.

HortNZ's purpose is to create an enduring environment where growers prosper. This is done through enabling, promoting and advocating for growers in New Zealand.

Export

Fruit $4.04bn

Vegetables $0.64bn

Domestic

Fruit $0.93bn

Vegetables $1.34bn

Industry value $6.95bn

Total exports $4.68bn

Total domestic $2.27bn

PART 2

Gas Transition Plan

Chapter 2: Transitioning our gas sector	
	How can New Zealand transition to a smaller gas market over time?
1	How the transition process occurs will be incredibility important for the ability of businesses to stay open and to protect our indoor supply of fresh fruits and vegetables. Already, growers are noticing market disruption due to uncertainty caused by the government's conversations and intended direction. They have experienced non-renewal of gas supply contracts, pricing increases and uncertainty about future availability. Growers have actively explored decarbonisation options, with varying degrees of success. There need to be realistic and viable alternative options to gas before active disruption and cessation of gas supply takes effect. This means ensuring there are sufficient alternatives in place before removing people's ability to access them. Biogas is one alternative; however, growers are concerned there is not enough volume produced or available to support the current demand and volumes, let alone a significant increase. The Government needs to provide more clarity around volumes, supply and plans to actively increase biogas availability to provide consumers reassurance that this is a realistic transition pathway. Government investment may be needed to make this a viable alternative.
2	What is needed to ensure fossil gas availability over the transition period?
	Gas network users need to be reassured that there is continuity and reliability in supply. If there is a concerted effort to reduce fossil gas availability, there needs to be clear understanding and availability of viable alternatives such as biogas. Growers are concerned that if the volume of biogas is not reliably and commercially produced to support a large-scale transition and reduction in fossil gas supply, there will be shortages and vulnerabilities to horticultural operations. Using a blend of biogas/natural gas could be a good first step to overall reduction in fossil gas use; however, growers need reliability of supply and would urge the Government to maintain gas networks, production and availability of fossil gas until there are sufficient biogas or other fossil gas alternatives available.
	What factors do you see driving decisions to invest or wind down fossil gas production?
3	Certainty of government direction and support will be one of the main factors that influences infrastructure investment decisions. Awareness varies depending on the scale of the business. Large users and consumers will be more sensitive and aware of

political decisions and directions that will help or hinder their businesses. As mentioned in the discussion documents, the two largest users generally dictate the amount of gas produced from the gas fields off the coast of New Plymouth. Large consumers and users will actively investigate alternatives if their operations are at risk due to future fossil gas availability and use these options once their is confidence in their reliability and security of supply.

On the other hand, smaller residential and commercial users may be less engaged with the government's thinking and be more vulnerable to changes that affect the ongoing supply or availability of gas. In sum, the factors are:

- Reliability;
- Security of supply;
- Cost;
- Whether the alternative is directly transferable or replaces fossil gas;
- Risk and government indecision or lack of certainty and impact on private business and market options; and
- Access to CO_2 for covered crop growers who harvest the CO_2 by-product of gas combustion to use in greenhouses for plants.

Does the Government have a role in enabling continued investment in the gas sector to meet energy security needs? If yes, what do you see this role being?

4

Absolutely, there have already been impacts on horticultural covered cropping businesses who use gas to heat their tunnel houses. Some impacts include:

- Non-renewal of gas contracts;
- Pivots by growers who do not have realistic alternatives;
- Exploration and investigation into alternatives; however, there is uncertainty and an inability to have a definitive timeframe about when these alternatives become available and realistic as there is a lot of testing and R&D needed to identify realistic alternatives.

There have already been impacts on growers who were unable to secure ongoing gas contracts as a result of the uncertainty caused by government direction. We expect the uncertainty caused by government direction would extend to an unwillingness to invest in infrastructure and will have a large scale impact on gas users through the transition.

We agree that there may be a place for importing gas, or increasing gas storage facilities to ensure there is adequate and cost-effective measures to ensure gas consumers are able to be confident they will have access to gas during the transition to a low emissions economy.

Does the Government have a role in supporting vulnerable residential consumers as network fossil gas use declines? If yes, what do you see this role being?

5

Absolutely. Many residential and smaller commercial premises have gas connections. Furthermore, many in the horticultural community have gas connections as they are rurally based. Having a gas connection provides some reliablility and resilience, especially during power outages or natural disasters.

HortNZ has noted in consultation documents that the residential and small commercial markets have the smallest market share of gas useage, yet have the largest number of connections. This is indicative of the scale of impact across the community at large – each individual connection is someone who will be impacted by changes to fossil gas availability.

There is active and ongoing work by plumbers and developers to install new gas systems, both in new build properties and as part of a property upgrading from a hot water cylinder and/or cooking system. Some of these connections may be into the existing gas network, and others maybe through use of 45kg and 9kg gas cylinder bottles, depending on the location - for hotwater, gas for cooking etc. Rapid changes in gas supply will place an unfair burden on these small commercial and residential consumers with new gas connections who are unaware of government plans. One could argue that it is unethical of government to impose additional cost burden, and consumers should be reassured that the government is not going to place an additional cost and waste burden on residential and commercial gas consumers.

Fossil gas and electricity

What role do you see for gas in the electricity generation market going forward?

Reliability and security of energy is very important for the country. We are all reliant on electricity for some aspects of our lives. Any risk to the security and reliability needs to be addressed as a priority. However, there is already risk that has manifested through gas contract renewal for commercial greenhouses. This has resulted in non-renewal of gas supply contracts due to the uncertainty of the future of fossil gas.

Growers need carbon dioxide to aid plant respiration and growth. The by-product of burning natural gas is carbon dioxide, and growers harvest this and redirect the carbon dioxide into tunnel houses. The gas is used for both heating and for production of CO_2. Without the addition of the harvested CO_2, production drops up to 25%[1] which significantly affects the economic viability of growing covered crops.

6 Purchasing additional CO_2 has two consequences – further eroding the economic viability of covered cropping and increasing the price of crops. Furthermore, purchasing additional CO_2 has become problematic as a result of other government decisions, like the closure of Marsden Point oil refinery in March 2023 motivated by the plan to reduce climate emissions[2].

Growers are able to reduce the amount of gas used in operations through other techniques, such as the installation of screens. Many have already taken these measures and are looking to examples overseas of other growing techniques and technologies to further reduce the need for gas. It is important to note that many of these techniques and technologies can reduce an operations gas consumption, but not eliminate the need for gas for heating and CO2 production entirely.

This is one of the key reasons underpinning the use and reliance of gas in covered crop production and one of the reasons why electricity heating options are not viable.

[1] Based on direct feedback from growers and is well supported by international research depending on the growing system in place

[2] CO2 shortage threatens wide range of NZ groceries including Tegel chicken | Stuff.co.nz

	Arguably, importing fossil gas to supplement domestic supply is counter-productive to the nation's decarbonisation efforts. Firstly, through carbon leakage, and secondly, through the carbon emitted to transport the gas to New Zealand. Biogas blended with fossil gas can help reduce the amount of fossil gas needed to be produced.
	What would need to be in place to allow gas to play this role in the electricity market?
7	Relying solely on gas is counter productive to energy transition plan goals of moving away from fossil fuels. This also contradicts the efforts made by industry to actively decarbonise. What is needed is a clear pathway and plan for how gas will be produced or sourced to meet demand in New Zealand. Consideration needs to be given towards acceptance that fossil gas fulfills an essential role in New Zealand's energy profile. This would include fossil gas role in electricity generation – even as a back up source, industries reliant on fossil gas that have no realistic alternatives and those that harvest by-products of combustion of fossil gas to be used within their operations.
	Do you think gas can play a role in providing security of supply and/or price stability in the electricity market? Why / Why not?
8	Feedback from growers indicates that there have been commercial impacts through non-renewal of gas supply contracts. This is leading to innovative approaches by growers to ensure they are able to access the gas needed to run their operations in lieu of viable alternatives being available. This uncertainty of supply will be felt by consumers through price fluctuations. Fossil gas availability into the future is dependent on the decisions made as part of the Gas Transition Plan. If existing commercial users are feeling the impacts of the speculation caused by government discussions about decarbonisation, then it is likely that this will flow through to consumers of electricity that has been generated using gas. Speculation and uncertainty caused by government discussion about transitioning away from fossil fuels drives uncertainty about the future availability of gas. Clarity is needed for consumers to have confidence and stability in both gas availability and price into the future.
	Do you see alternative technology options offering credible options to replace gas in electricity generation over time? Why / Why not?
9	Technology and technology potential are two different things. Current technologies do offer viable alternatives for gas free electricity generation. The Government just needs to fast track more hydro dams, solar farms, wind farms, and micro generation. For spot demand, we need to implement something like Dinorwig[3]. However, there is always some form of environmental trade-off with any option. Visual impacts from windmills for example, or flooded valleys for hydro-production. Technology potential is limitless. There is no certainty, however, on when technologies will be identified, tested developed and then made commercially available. Unless

[3] Dinorwig Hydroelectric Plant, Wales - TheGreenAge

	there is certainty and clarity about availability of technology, then this is not a metric that can be planned against with confidence.
10	If you believe additional investment in fossil gas infrastructure is needed, how do you think this should be funded?
	We do not believe that additional investment in fossil gas infrastructure is needed. Central government has signaled an active transition away from fossil gas. This has already had implications in businesses and their ability to secure their ongoing gas supply contracts. Targeted funding from income gained through the ETS can help fund innovation and transition research, development and implementation.
Chapter 3: Key issues and opportunities	
	Renewable gases and emissions reduction technologies
	On a scale of one to five, how important do you think biogas is for reducing emissions from fossil gas? Why did you give it this rating?
11	Assuming 5 is most important – biogas would be a 5. Biogas and hydrogen are two clean gas-based fuels that can be blended with fossil gas to reduce the volume of fossil gas required to meet demand. We are aware of two initiatives – First Gas is working on 20% hydrogen in gas, and there is the possibility of biogas like what they are doing in Reporoa to this produce gas and CO_2.
	Do you see biogas being used as a substitute for fossil gas? If so, how?
12	Depending on the supply availability, we see biogas being used as an alternative in the future.
	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?
13	Hydrogen can have a role to play in the reduction of fossil gas use in New Zealand. As mentioned above, hydrogen can be blended with fossil gas to reduce the amount of fossil gas being consumed. We believe there may be many options that should be developed as alternatives rather than a focus on one single product. This includes supporting activities that help with overall reduction in use of gas.
	Do you see hydrogen being used as a substitute for fossil gas? If so, how and when?
14	See above.
15	What else can be done to accelerate the replacement of fossil gas with low-emissions alternative gases?

	There needs to be consideration of actions that can reduce the need for gas usage – through installation of screens, for example. We would caution whether there needs to be consideration and discussion with industry about the wider decarbonisation efforts and progress and how this can be continued or accelerated.
16	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?
	n/a
17	What role do you see for the government in supporting such a scheme?
	n/a
	Carbon Capture, Utilisation and Storage
18	On a scale of one to five how important do you think CCUS is for reducing emissions from fossil gas use? Why did you give it this rating?
	n/a
19	What are the most significant barriers to the use of CCUS in New Zealand?
	n/a
20	Do you see any risks in the use of CCUS?
	n/a
21	In what ways do you think CCUS can be used to reduce emissions from the use of fossil gas? Growers currently directly capture CO_2 from burning fossil gas and use this to aid plant growth. CO_2 is necessary for plant respiration and plants take in CO_2 and expire O_2. There needs to be recognition of the purpose for which fossil gas in being used in covered cropping – for the production of food crops, fruit and vegetable crops that support the health of people.
	Options to increase capacity and flexibility of gas supply
22	What role do you see for gas storage as we transition to a low-emissions economy?
	n/a
23	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?
	n/a

24	What should the role for government be in the gas storage market?
	n/a
25	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?
	n/a
26	What risks do you anticipate if New Zealand gas markets were tethered to the international price of gas?
	n/a

General comments

Fresh fruits and vegetables play an important role in the health of all New Zealanders. Bolstering our domestic production is critical for public health. Covered cropping plays and essential role in making fresh fruit and vegetables available for extended seasons.

Food crops destined for the export market support the transition to a low-emissions economy. The overall low-environmental impact that covered cropping systems offer needs to have recognition and consideration during all energy transition plans.

PART 3

Electricity Market Measures

Part 1: Growing Renewable Generation	
1.	Are any extra measures needed to support new renewable generation during the transition? Please keep in mind existing investment incentives through the energy-only market and the ETS, and also available risk management products. Any new measures should add to (and not undermine or distort) investment that could occur without the measures.
	n/a
2.	If you think extra measures are needed to support renewable generation, which ones should the government prioritise developing and where and when should they be used? What are the issues and risks that should be considered in relation to such measures?
	The horticulture sector is concerned about network capacity. Our industry, especially the covered cropping sector, are trying to decarbonise. Covered cropping is the practice of growing indoors, which is essential to provide the tomatoes, cucumbers, capsicum, and leafy greens that Kiwis eat year-round. These crops are heated, so many greenhouses currently run on fossil fuels. The initial focus is on reducing energy requirements and improving energy efficiency within operations. Future decarbonisation will usually involve electricity-based technologies. Currently, only 11% of covered cropping systems by area use renewable energy sources.[4] Electricity is an attractive option because it is mostly renewable. The wrinkle is that the South Island especially faces frequent power cuts, which leaves people to turn on their high emissions diesel generators while they await restored power. More reliable electricity infrastructure is required to avoid this negative consequence. We are concerned that there is not adequate infrastructure (cabling underground to transport electricity, adequately sized transformers) and generation to support large scale uptake of electricity. While switching to renewable systems is better for the environment, the transition costs and slow return on investment make the change untenable for horticultural businesses, which have the slimmest of margins.

[4] Deta Consulting. *Covered Crops Decarbonisation Plan: Final Report Revised*. 08/02/2022. (p. 10)

3.	If you don't think further measures are needed now to support new renewable generation, are there any situations which might change your mind? When and why might this be?
	n/a
4.	Do you think measures could be needed to support new firming/dispatchable capacity (resources reliably available when called on to generate)? If yes, which kind of measures? What needs do you think those measures could meet and why?
	We need a push to install more demand flags to monitor high energy users on the grid. If the grid needs more energy in another location, the demand flag will tell the high energy user to turn off for a short period until the grid stabilises. This creates more flexibility in the grid, which leads to cheaper electricity.
5.	Are any measures needed to support storage (such as battery energy storage systems or BESS) during the transition? If yes, what types of measures do you think should be considered and why?
	n/a
6.	If you answered yes to question 4 or 5 above, should the support be limited to renewable generation and renewable storage technologies only or made available across a range of other technologies? Keep in mind that fossil fuels are generally the cheapest option for firming, though this may change over time as renewable options (particularly batteries) become more efficient and affordable.
	n/a
7.	If you answered yes to question 6 above, what are the issues and risks with this approach? How could these risks and issues be addressed?
	n/a
8.	Are any measure(s) needed to support existing or new fossil gas fired peaking generation, so as to help keep consumer prices affordable and support new renewable investment?
	n/a
9.	If you answered yes to question 8 above, what measures should be considered and why? What are the possible risks and issues with these measures?
	n/a
10.	If you answered yes to question 8 above, what rules would be needed so that fossil gas generation remains in the electricity market only as long as needed for the transition, as part of phase down of fossil gas?
	n/a
11.	Are there any issues or potential issues relating to gas supply availability during electricity system transition that you would like to comment on?
	n/a
12.	Do you agree that specific measures could be needed to support the managed phasedown of existing fossil fuel plants, for security of supply during the transition?
	n/a

13.	If you answered yes to question 12 above, what measures do you think could be appropriate and why? What conditions do think you should be placed on plant operation? For example, do you have any views on whether there should be a minimum notice period for reductions in plant capacity, and/or for placing older fossil fuel plant in a strategic reserve?
	n/a
14.	If you answered yes to question 12 above, what are the issues and risks with these measures and how do you think these could be addressed?
	n/a
15.	What types of commercial arrangements for demand response are you aware of that are working well to support industrial demand response?
	n/a
16.	What new measures could be developed to encourage large industrial users, distributors and/or retailers to support large-scale flexibility?
	n/a
17.	Do you have any views on additional mechanisms that could be developed to provide more information and certainty to industry participants?
	n/a
Part 2: Competitive Markets	
18.	Do you agree that the key competition issue in the electricity market is the prospect of increased market concentration in flexible generation, as the role of fossil fuel generation reduces over time?
	n/a
19.	Aside from increased market concentration of flexible generation, what other competition issues should be considered and why?
	n/a
20.	What extra measures should or could be used to know whether the wholesale electricity market reflects workable competition, and if necessary, to identify solutions?
	n/a
21.	Should structural changes be looked at now to address competition issues, in case they are needed with urgency if conduct measures prove inadequate?
	n/a
22.	Is there a case for either vertical separation measures (generation from retail) or horizontal market separation measures (amending the geographic footprint of any gentailer) and, if so, what is this?
	n/a
23.	Are measures needed to improve liquidity in contract markets and/or to limit generator market power being used in retail markets? If yes, what measures do you have in mind, and what would be the costs and benefits?

	n/a
24.	Should an access pricing regime be looked at more closely to improve retail competition (beyond the flexibility access code proposed by the Market Development Advisory Group or MDAG)?
	n/a
25.	What extra measures around electricity market competition, if any, do you think the government should explore or develop?
	n/a
26.	Do you think a single buyer model for the wholesale electricity market should be looked at further? If so, why? If not, why not?
	n/a
Part 3: Networks for the Future	
27.	Do you consider that the balance of risks between investing too late and too early in electricity transmission may have changed, compared to historically? If so, why?
	n/a
28.	Are there any additional actions needed to ensure enough focus and investment on maintaining a resilient national grid?
	n/a
29.	Do you agree we have identified the biggest issues with existing regulation of electricity distribution networks?
	n/a
30.	Are there pressing issues related to the electricity distribution system where you think new measures should be looked at, aside from those highlighted in this document? How would you prioritise resolving these issues to best enable the energy transition?
	n/a
31.	Are the issues raised by electricity distributors in terms of how they are regulated real barriers to efficient network investment? Please give reasons for your answer. Is there enough scope to address these issues with the current ways distributors are regulated? If not, what steps would you suggest to address these issues?
	n/a
32.	Are there other regulatory or practical barriers to efficient network investment by electricity distributors that should be thought about for the future?
	n/a
33.	What are your views on the connection costs electricity distributors charge for accessing their networks? Are connection costs unnecessarily high and not reflective of underlying costs, or not? If they are, why do you think this is occurring?
	n/a
34.	If you think there are issues with the cost of connecting to distribution networks, how can government deliver solutions to these issues?

Especially for growers in the South Island, switching to electricity would require huge investments in electricity infrastructure upgrades. Electricity companies are asking for cost-prohibitive capital contributions from customers to join the grid, and rural electricity users already face several power cuts per year without the additional load. For example, one South Island grower looking to decarbonise was quoted $300k for a new electric boiler (already a large sum) and then $1.6 million for network upgrades to get the electricity they need to their site. Growers cannot afford to foot that kind of bill – they have very slim margins. The GIDI fund only covers large greenhouses due to the emissions threshold, so small and medium growers have no support to decarbonise but face the penalties of the ETS.

The Government should take on responsibility for ushering in a green transition through subsidising these costs because growers cannot pay for these upgrades. The Government needs a plan to improve regional infrastructure such that businesses can tap in without extensive costs. The most cost-effective path is community infrastructure, which is more efficient than building transformers for each individual business.

It is important that no new customers subsidise existing customers when they pay for electricity infrastructure upgrades. That would be an inequitable practice. Decarbonisation will require the fairest possible capital contribution policy; otherwise, businesses cannot afford to make the switch.

35. Would applying the pricing principles in Part 6 of the Code to new load connections help with any connection challenges faced by public EV chargers and process heat customers? Are there other approaches that could be better?

All of the principles listed from Part 6 would be helpful for new load connections – anything that puts less burden on the customer would make it easier for businesses to convert to electricity. The first point on requiring distributors to provide information would be especially helpful because it takes a lot of work to figure out what upgrades would be required for a site and how much electricity you need. This principle would reduce back and forth between the customer and the distributor, saving everyone time and money. If setting pricing principles means the price drops, that helps more businesses electrify too.

36. Are there any challenges with connecting distributed generation (rather than load customers) to distribution networks?

n/a

37. Are there different cost allocation models addressing first mover disadvantage (when connecting to distribution networks) which the Electricity Authority should explore, potentially in conjunction with the Commerce Commission?

n/a

38. Should the Electricity Authority look at more prescriptive regulation of electricity distributors' pricing? What key things would need to be looked at and included in more prescriptive pricing regulation?

n/a

39.	Do current arrangements support enough co-ordination between the Electricity Authority and the Commerce Commission when regulating electricity distributors? If not, what actions do you think should be taken to provide appropriate co-ordination?
	n/a
40.	Will the existing statutory objectives of the Electricity Authority and Commerce Commission adequately support key objectives for the energy transition?
	n/a
41.	Should the Electricity Authority and/or the Commerce Commission have explicit objectives relating to emissions reduction targets and plans set out in law? If so, • should those objectives be required to have equal weight to their existing objectives set in law? Why and how might those objectives affect the regulators' activities?
	n/a
42.	Should the Electricity Authority and/or the Commerce Commission have other new objectives set out in law and, if so, which and why?
	n/a
43.	Is there a case for central government to direct the Commerce Commission, when dealing with Electricity Distributors and Transpower, to take account of climate change objectives by amending the Commerce Act and/or through a Government Policy Statement (GPS)?
	n/a
44.	If you answered yes to question 43, please explain why and indicate: • What measures should be used to provide direction to the Commerce Commission and what specific issues should be addressed? How would investment in electricity networks be impacted by a direction requiring more explicit consideration of climate change objectives? Please provide evidence.
	n/a
Part 4: Responsive Demand and Smarter Systems	
45.	Would government setting out the future structure of a common digital energy infrastructure (to allow trading of distributed flexibility) support co-ordinated action to increase use of distributed flexibility?
	n/a
46.	Should central government see how demonstrations and innovation to help inform how trade of flexibility evolves in the New Zealand context, before providing direction to support trade of distributed flexibility? If yes, how else could government support the sector to collaborate and invest in digitalisation now?
	n/a
47.	Aside from work already underway, are there other areas where government should support collaboration to help grow and develop flexibility markets and improve outcomes? If yes, what areas and actions are a priority?
	n/a

48.	Could co-funding for procurement of non-network services help address barriers to uptake of non-network solutions (NNS) by electricity distributors?
	n/a
49.	Would measures to maximise existing distribution network use and provide system reliability (such as dynamic operating envelopes) help in New Zealand? If yes, what actions should be taken to support this?
	n/a
50.	What do you think of the approaches to smart device standards and cyber security outlined in this document? Are there other issues or options that should be looked at?
	n/a
51.	Do you think government should provide innovation funding for automated device registration? If not, what would best ensure smart devices are made visible?
	n/a
52.	Are extra measures needed to grow use of retail tariffs that reward flexibility, so as to support investment in CER and improved consumer choice and affordability?
	n/a
53.	Should the government consider ways to create more investment certainty for local battery storage? If so, what technology should be looked at for this?
	A lot of growers have solar panels on-farm, but they need the electricity mostly at night. They could use support investing in batteries to store this energy. Greenhouses also need a consistent supply of electricity as they decarbonise. Battery Energy Storage Systems (BESS) will provide energy in an emergency and build flexibility into the energy system. To support their use for greenhouses, BESS should have a pathway to establish on highly productive land, where most horticulture occurs. BESS need the most options possible for where to establish to ensure they can be in the safe and strategic locations. Legislation to encourage and support micro generation would smooth out our energy supply. Each home in New Zealand could have a solar array on the roof coupled with battery banks, and then sell excess energy back to local users (thus minimising transmission losses) at a fair price. If there was a large scale move towards solar, this would smooth out spikes in the demand.
54.	Should further thought be given to making upfront money accessible to all household types, at all income levels, for household battery storage or other types of CER?
	n/a
55.	Should government think about ways to reduce 'soft costs' (like the cost of regulations, sourcing products, and upskilling supplier staff) for installing local battery storage with solar and other forms of CER/DER storage? If so, what technology should be looked at?
	n/a

56.	Is a regulatory review of critical data availability needed? If so, what issues should be looked at in the review?
	n/a
Part 5: Whole-of-system considerations	
57.	What measures do you consider the government should prioritise to support the transition?
	The government should prioritise lowering the cost or subsidising new electric boilers and supporting infrastructure for the covered cropping sector to bolster our domestic food supply. There should be a wide-scale infrastructure bill to support infrastructure costs for decarbonisation.
58.	Are there gaps in terms of information co-ordination or direction for decision-making as we transition towards an expanded and more highly renewable electricity system and meeting our emissions goals? Please provide examples of what you'd like to see in this area.
	n/a
59.	Are there significant advantages in adopting a REZ model, or a central planning model (like the NSW EnergyCo), to coordinate electricity transmission investment in New Zealand? Would a REZ model for local electricity distribution be an effective means of addressing first mover disadvantage with connecting to electricity distribution networks?
	n/a
60.	Should MBIE regularly publish opportunities for generation investment to enable informed market decision-making?
	n/a
61.	How should the government balance the aims of sustainability, reliability and affordability as we transition to a renewable electricity system?
	The government should balance all three – we shouldn't have to prioritise some over the others. Continuous improvement will be necessary, but we should work toward all of the above. For growers, affordability is the most important factor over whether and how they'll decarbonise. Growers are feeling a tight financial squeeze with thin profit margins, the ETS, labour costs, inflation and more. Growers do care about sustainability, but they can't make the change to electricity in the first place if it's not affordable. Reliability is a close second with sustainability because power cuts in cold temperatures can harm plant growth.
62.	To what extent should wholesale, transmission, distribution or retail electricity pricing be influenced by objectives beyond the (affordability-related) efficiencies achieved by cost-reflective pricing, such as sustainability, or equity?
	We are deeply concerned that artificially increasing the price of electricity just as growers are being actively encouraged to uptake electricity-based technologies with sky-high capital costs (like heat pumps to replace boilers) will create a financially

	untenable situation. Sustainability concerns are already being regulated through the ETS. Growers should not have to pay for their emissions twice through both the ETS and objectives-influenced pricing. Sustainability considerations are already driving pricing through the market. Energy in the South Island is already cheaper because it is so driven by renewable sources.
63.	Are the current objectives for the system's regulators set in law (generally focusing on economic efficiency) appropriate, or should these also include more focussed objectives of equity and/or affordability?
	n/a

General Comments:

Electricity connections and energy prices need to be affordable for covered crop decarbonisation.

An increase in covered cropping will be essential to adapt the food production system to the variable weather that comes with a changing climate while still producing enough food for our population. Indoor growing systems are less vulnerable to environmental conditions and pressures such as significant weather events. During Cyclone Gabrielle, 80% of the tomatoes grown outdoors for processing were destroyed, whereas the supply of indoor grown greenhouse tomatoes was relatively unaffected. Covered crops play an important part in providing supply of fresh produce at times of the year when outdoor cropping is challenging. Covered crop growers even out the supply of fresh produce, extending the availability of seasonal crops. Indoor growing systems also use less water and land and fewer nutrients than growing outdoors. Their electricity needs come from heating seasonally, but heat is not run all the time.

Fresh fruit and vegetables play an important role in the health of all New Zealanders. Bolstering our domestic production is critical for public health.

PART 4

Interim Hydrogen Roadmap

Section 1: Hydrogen is emerging as an important part of the future global energy system	
	Are there other issues we should be considering in our assessment of the strategic landscape for hydrogen in New Zealand?
1	It will take an enormous amount of renewable energy to produce hydrogen fuels at scale. This energy use is in addition to all of the increased demand from electrification as sectors across the country decarbonise.
Section 2: The role for hydrogen in New Zealand's energy transition	
	Do you agree with our assessment of the most viable use cases of hydrogen in New Zealand's energy transition?
2	Yes, we agree with the assessment of industrial processes and transport applications as the most viable use cases.
	Do you support some of these uses more than others?
3	The horticulture industry is particularly supportive of hydrogen use in trucking, marine shipping and aviation for to support our export industries. We also support applications to reduce emissions from fertiliser (urea and ammonia) production. The sector is particularly reliant on trucks as a mode of transport between the orchard/farm, packhouse, and/or processing facility and port. The distributed nature of horticulture and the perishability of fresh product creates limitations on the use of rail and coastal shipping, particularly for domestic distribution. Airfreight transportation is used for fruits with a short shelf life. Beyond the orchard gate, trucks are frequently used to transport fruit and vegetables to New Zealand consumers or ports, and some growers have their own truck fleets. We could be an early adopter of hydrogen-based trucking if it was affordable. As mentioned in this consultation document, H.W. Richardson is already trialling hydrogen-diesel trucks which have the potential to reduce trucking carbon emissions by 40%.[5] Low and zero-emissions maritime fuels can fast-track the decarbonisation of international shipping and reduce New Zealand's vulnerability to fluctuating global fossil fuel prices. Without shipping alternatives, global emissions pricing will increase fuel costs, driving up the prices of imported food and reduce market access for our

[5] H.W. Richardson. "Driving Change. Driving Hydrogen." Accessed online 12/06/23. https://www.hwr.co.nz/hydrogen

	exported goods. New Zealand should prioritise and invest in lower emissions maritime shipping to bolster our country's reputation as a sustainable producer. Low or zero-emissions ships will be bigger, so New Zealand ports need upgrades to reduce congestion and keep up with changing shipping expectations. Existing processes for developing ports are lethargic and costly – making the upgrades we need should have priority given their potential to enable low emissions maritime trade.
4	What other factors should we be considering when assessing the right roles for hydrogen in New Zealand's energy transition?
	New Zealand should be working to establish green shipping corridors and invest in low or zero-emissions fuels for maritime transportation. This is essential for trade with our export partners, some of whom will be assessing lifecycle carbon emissions as conditions of our trade agreements. Our exports potentially face non-tariff barriers if we cannot meet the requirements of our trading partners' domestic legislation, such as the EU Emissions Trading Scheme. This is a risk for our continued market access. We can position ourselves as an important stop in a green shipping route if we domestically produce hydrogen fuel. Then, New Zealand will be a port to both pick up goods and refuel green ships. The development of hydrogen-fuelled transport will require complementary policies. For instance, ports will need upgrades to allow for larger, low or zero-emissions hydrogen-fuelled shipping vessels.
5	Do you agree with this assessment of the potential for hydrogen supply and demand in New Zealand?
	Trade rules from our export partners will drive demand for hydrogen shipping from New Zealand.
6	Do you agree with the key factors we have set out that are likely to determine how hydrogen deployment could play out?
	Another barrier will be the speed, cost and complexity of the consent process for new energy infrastructure to produce green hydrogen.
7	What do you think needs to happen to address these factors?
	The consenting process for new hydrogen generation needs to be streamlined to allow sector growth.
8	Do you have any evidence to help us build a clearer picture?
	Many of the emissions from horticulture come from movement of products domestically and internationally. For export-based products, sea shipping carries more emissions compared to the road transport of the product during its journey to the destination country (New Zealand Avocado Lifecycle Assessment). For instance,

	only 6% of kiwifruit lifecycle emissions occur on orchard, while 43% come from shipping (Zespri Climate Change Adaptation Plan). Hydrogen fuel for trucking goods around the country and international shipping/air freight would be welcomed to help horticultural supply chains reduce emissions. 93% of domestic goods are shipped by road transport based on 2017/18 National Freight Demand Study, 5.9 million tonnes of supply driven commodities in this study were horticultural in 2017/18 (about 7% of total commodities considered) (p. viii – ix).
9	Do you agree with our findings on the potential for hydrogen to contribute to New Zealand's emissions reduction, energy security and resilience and economic outcomes?
	HortNZ agrees about emissions reduction potential from transport, and that decarbonising with green hydrogen will have a positive effect on economic growth. There will also be economic benefits for NZ's fruit exports from green shipping. As it stands, horticulture is already a low-emissions industry, so it often misses out on government decarbonisation funding. This is increasing inequity in research and development between sectors, despite horticulture being an important industry for food security and human health, low environmental impact and export earnings. Research into hydrogen fuels will support horticultural businesses in a positive step toward closing that equity gap.
10	Do you have any insights we should consider on what is needed to make hydrogen commercially viable?
	n/a
11	Is there any further evidence you think we should be considering?
	n/a
Section 3: Government position and actions	
12	Do you agree with our policy objectives?
	We agree with these objectives.
	Do you agree with our positioning on hydrogen's renewable electricity impacts and export sector?
13	We agree that there will be huge demand for renewable electricity generation as everyone tries to electrify, especially with the incentive of the ETS. Will need to manage impact on the grid and ensure generation infrastructure is built at pace to match demand.
14	Do you agree with the proposed actions and considerations we have made under each focus area?

	We support the budget for a Clean Heavy Vehicle Grant for zero emissions heavy vehicles, including hydrogen fuel cell heavy vehicles.
15	Is there any evidence we should be considering to better target actions in the final Hydrogen Roadmap? • Climate expectations in our international trade agreements
General comments	
The horticulture industry supports the decarbonisation of fertiliser production using green hydrogen.	