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## BIOENERGY AUSTRALIA SUBMISSION

Energy Security Target and Safeguard - June 2020

*The purpose of this submission from Bioenergy Australia is to support the inclusion of bioenergy technologies in the Energy Security Safeguard as part of the expansion to fuel switching activities that reduce demand on electricity and gas networks.*

### About Bioenergy Australia

Bioenergy Australia is the National Industry association, committed to accelerating Australia's bio economy. Our mission is to foster the bioenergy sector to generate jobs, secure investment, maximise the value of local resources, minimise waste and environmental impact, and develop and promote national bioenergy expertise into international markets.

Bioenergy Australia's objectives are to:

*Advocate* - With our members, we anticipate and develop leading positions on issues of concern to the advancement and growth of bioenergy in Australia.

*Campaign* - We raise the profile of the industry within the media and broader community to achieve a greater level of understanding about bioenergy and the vital role it must play to achieve carbon neutrality by 2050.

*Inform* - We publish reports, webinars and articles to help our members keep ahead of industry trends and opportunities.

*Connect* - We facilitate knowledge exchange and networking for members through task-specific meetings, our Annual Conference, and Webinars. We link investors with emerging businesses; researchers with technology developers; government with innovators. We also administer Australia's participation in IEA Bioenergy. Our Industry groups bring together specialists in specific fields.

Bioenergy (both in bioelectricity and renewable heat form) is an effective, low carbon and low-cost grid management and energy storage option, which can be used to relieve the pressure on system level management of the grid by making the grid more stable. Therefore, Bioenergy Australia strongly encourages the inclusion of bioenergy technologies in the scheme and highlights the key opportunities below.

## Electricity

Maintaining energy security in the NEM will require significant new dispatchable capacity as coal-fired power stations retire. In addition, with wind and solar playing a dominant role in the energy transition, the integration of these intermittent energy sources with the electricity supply grid places significant pressure on grid operation and management.

While considering solutions and strategies in balancing the grid, bioenergy, in its various forms, can provide significant system support roles. Bioenergy is a flexible and dispatchable source of electricity generation that can be used to support reliability and security of the grid. Biomass can be considered a type of "green battery" with very high energy storage capacity, which it is unaffected by temperature and indefinitely retains its charge. [IEA estimates](#) indicate that in 2018 power generation from biomass increased an estimated 8%, maintaining average growth rates since 2011, with bioenergy being one of only two technologies seeming to be "on track" with targets in the power sector.

There is a growing market need to create solutions for industrial scale, cost effective electricity storage capacity. As an example, biomass from sugar processing is a particularly rich renewable energy resource, that could generate large amounts of electricity at relatively low cost while balancing intermittency in a similar way to fossil thermal energy. For instance, bagasse generation from the sugar mills in QLD and northern NSW already provides over 400MW of baseload green generation to the NEM. Many projects are already successfully operating on the ground, such as the Cape Byron Power, operated by Cape Byron Management, which consists of two 30 MW biomass fired power stations, on the NSW north coast. Together, these form one of the largest renewable base load generators in Australia. More projects are emerging to support baseload renewable energy production. One example is the MSF Sugar's Tableland Mill, which is expected to provide 24MW generation capacity, enough to power 26,280 homes – which is the entire population of the Tableland region.

## Heat

Renewable heat can also strongly support the reliability of the grid, as the electricity demand can be significantly reduced if heat and electricity can be supplied through bioenergy and cogeneration. A major impediment to bioenergy uptake in Australia has been the sole emphasis on renewable electricity rather than the whole energy sector (including renewable heat) in previous climate change/energy policies, including the Renewable Energy Target (RET) framework. The RET only recognised the renewable energy benefits from electricity production and not the benefits from the generation of renewable heat energy in the large-scale component of the RET, despite recognising solar hot water energy in the Small-scale Renewable Energy Scheme (SRES). This has constrained bioenergy investment in renewable heat and cogeneration opportunities. This policy inequity needs to change.

Australia's regional manufacturing industries (including wood and paper products) use heat energy for a wide variety of applications, including drying, preheating, and process heating (e.g. steam for process drying in papermaking or sawmills). The significant size and scale of industrial heat energy use represents a unique opportunity for renewable generation. Conversion to bioenergy for either direct electricity or heat energy needs, will remove demand for grid electricity which would be an attractive outcome to market participants.

## ***Setting an Energy Security Target***

*Is the approach to assessing firm capacities from generators, interconnectors and demand response used to meet the EST reasonable and appropriate? Is there an alternative approach?*

In line with the NSW government aspiration of net zero emissions by 2050 the firm generators will need to be decarbonised in this timeframe. Therefore, there should be additional incentives or a reserved portion of the target for firm renewable electricity generators. This portion could be increased towards 2050 such that the EST becomes completely renewable. This would incentivise the use of dispatchable biogas generation and encourage investment in new dispatchable renewable technology.

*Is the approach to applying the capacity factors for wind and solar generators reasonable and appropriate?*

The contribution to capacity should be based on their estimated the 10%ile contribution, but only during times of that the reserve margin has had to be used and potentially future predictions of when it will be required. The use of percentiles averaged across the year does not correctly value their contribution to the margin when it is actually required, such as during the end of the 'duck curve'. This approach does not need to be complicated and could still be used to produce a general factor for solar and wind, but also provide the option for a project specific calculation. This project specific calculation would be to use a normalised 'reserve requirement weighting' dataset across the year that would be multiplied by the 10%ile generation for a particular facility to determine its total reserve contribution. The benefit of a specific method is that it would incentivise facilities that provide capacity when it is required by the market.

## ***Powers to gather information***

*Are the types of projects that may contribute to meeting the EST described above suitable and adequate? How could prospective projects, beyond those identified as committed, be considered within the EST forecast for firm capacity?*

Bioenergy Australia is delighted to see that switching from natural gas to biogas has been identified as key activity to reduce demand on electricity and gas. Locally produced biogas can be upgraded to biomethane and injected into the gas grid to provide net zero carbon energy for gas consumers, such as industry, households, commercial operations, electricity generation and even transport.

As outlined in the recent report ["Mapping the state of play of renewable gases in Europe"](#), the injection of biomethane into the gas network is well established in Europe with over 1,000 plants operational. More information can be found in the ["European Biomethane Map 2018"](#). According to the Deloitte Access Economics report ["Decarbonising Australia's gas distribution networks"](#), biogas blending/injection is currently the cheapest option for decarbonisation of the gas networks. As described in the report ["Biogas opportunities for Australia"](#), prepared by ENEA for Bioenergy Australia, biogas represents a significant decarbonisation opportunity for the Australian gas and transport sectors. The report estimated that the biogas potential in Australia is 103 TWh (371 PJ), which is comparable with current biogas production in Germany. Australia's biogas potential is equivalent to almost 9 per cent of Australia's total energy consumption of 4,247 PJ in 2016-2017. Considering the current average size of biogas units in Australia, this could represent up to 90,000 biogas units.

Gas is also increasingly important to create a stable and affordable electricity system. Biomethane through existing gas connections to peaking plants can provide dispatchable renewable electricity when the sun is not shining, or wind is not blowing.

Jemena is a major member of Bioenergy Australia and owns and operates the largest gas network in NSW with 1.4M existing connections. Jemena is committed to enabling affordable zero-carbon gas for their customers and welcome collaboration with the NSW government to ensure the success of this scheme.

In line with the NSW Government's aspirations to achieve net zero emissions by 2050, Bioenergy Australia supports the option of including projects switching from high-emission to cleaner alternatives in the Safeguard. In particular, we would like to highlight that the transition from fossil fuels to sustainable biofuels could strongly contribute to the national fuel security, while reducing the emissions from the transport sector. Australia currently imports the majority of its fuel. This not only represents a sovereign security risk, but also constitutes a loss of potential economic activity in Australia. A strong biofuel industry can help diversify the sources of transportation fuels and decrease Australia's dependence on petroleum imports, which will reduce the risk of supply constraints during times of international or regional geopolitical upheaval. According to The Queensland University of Technology (QUT) report ["Biofuels to bioproducts: a growth industry for Australia"](#), the implementation of a nation-wide mandate for 10% ethanol blending in petrol alone, as has been achieved in the US, could reduce automotive gasoline imports by about 18% annually and contribute to enhanced domestic fuel security.

### ***The NSW Government will extend the ESS to 2050 and increase targets***

Bioenergy Australia strongly supports the extension of the ESS to 2050 and the increased targets. As mentioned in the discussion paper, bioenergy has a strong potential to contribute to ESS, through projects like biomass and biogas and their ability to reduce emissions from industrial process heat. The ability to earn ESCs for bioenergy projects could make a material impact on their economics and therefore unlock investment, emissions saving and jobs that would otherwise not exist.

What are the most promising opportunities once commercial lighting reaches market maturity? What is the likely size and cost of these opportunities?

Biogas delivered through the gas network has the opportunity to unlock significant potential to contribute to the ESS, but also in doing so provide significant positive externalities such as regional jobs in biogas production and reduction in organic waste to landfill.

What would prevent the uptake of new opportunities? What support (including new standards and calculation methods) does industry need to transition to new opportunities?

A certification scheme for renewable gases (biogas, etc...) is required to apply the appropriate certificate conversion factors.

### ***The NSW Government will expand fuel switching activities***

Which cleaner fuel switching activities should the scheme provide incentives for?

Bioenergy should be supported by the scheme because, as mentioned in the discussion paper, it has a key role in switching grid connected energy to cleaner fuels and is well aligned with the NSW Government's net zero aspirations.

Bioenergy can in fact play a role in balancing the grid through a wide range of technical options, including:

» Biogas upgraded to biomethane - Biogas can be used directly onsite for local heat production using a boiler or it can be converted into heat and electricity using a combined heat and power unit. Electricity can be consumed on site (behind-the-meter), or exported to the grid, while heat can be used in local industrial processes. When biogas is upgraded to biomethane, it can also be compressed or liquefied to be used as vehicle fuel.

» Bioliquids - Liquid biofuels are of interest for grid balancing as they are storable and can be used as required, decoupled from their manufacture.

» Solid biomass - Solid biomass is mostly used in stationary heat and power generation, especially in relation to combined heat and power generation. Solid biomass can be used as co-feed along with other fuels or in boilers capable of firing up to 100% biomass.

*Should the scheme cover technologies that are being wound down under the SRES? If so, what is the best way to do this?*

Yes, Bioenergy Australia believes that the scheme should cover technologies that have not received an appropriate level of support under other mechanisms. A key example is bioenergy. While the Federal Government has implemented mechanisms, such as the Renewable Energy Target and Emissions Reduction Fund, to reduce greenhouse gas emissions, it has not had a substantive impact on the development of the bioenergy industry.

In addition, we would like to highlight that the Renewable Energy Target has only recognised the renewable energy benefits from electrical energy (such as the replacement of coal with renewable biomass feedstocks used to produce electricity). A significant renewable energy opportunity is currently being missed, and we recommend that the use of renewable biomass should similarly extend to the generation of heat energy (e.g. process steam for drying in papermaking or sawmills). Inclusion of renewable heat in the RET (or any alternative carbon policy mechanism) has significant potential and could contribute the equivalent of several thousand GWh in renewable energy per annum from the wood and paper products industry in Australia. It should be noted that in the Small-Scale Renewable Energy Target (SRET), solar hot water was included as a source of renewable heat.

*What would be the likely scale of uptake of cleaner fuel switching activities? Please consider the number, size, and cost of projects.*

Fuel switching activities will enable the participation of the industrial and manufacturing sectors that have largely not been able to participate in the current ESS due to their limited alternatives. This is especially true for those businesses that have processes and uses that are more difficult to modify and decarbonise such as high temperature process heat. The potential participants in this sector represent greater than 10 TWh of primary energy in NSW.

The production of these cleaner fuels will provide external benefits to NSW that are especially important at this time. The production facilities are often located in regional areas, where there is a consistent and scale supply of feedstock, creating jobs and investment in these areas. Utilising a

certification scheme, biogas injected into the gas network in regional NSW can be supplied to the 1.4M customers of the NSW gas network.

*Under what circumstances should the NSW Government consider extending scheme liability beyond the electricity sector?*

The challenges previously established for the extension of the scheme to the gas sector still remain; therefore, liability should not be extended beyond the electricity sector. Nevertheless, to prepare for the future inclusion of the gas sector we support additional support for the transition to renewable gas. A comparison of renewable gas with renewable electricity incentives shows that there are key elements missing for encouraging a transition to renewable gas, such as a national target that will drive investment and mechanisms that allow renewable gas project developers to participate in Australia's renewable energy markets. To raise Australia's policy development for renewable gas up to international standards, Bioenergy Australia encourages the NSW Government to consider establishing a near-term aspirational target for cost-effective renewable gas injection into the gas networks by 2030. The target should be informed by a cost-benefit analysis that looks at the use of renewable gas to decarbonise the gas network.

***Eligible peak demand reduction activities***

*Are there other activities the NSW Government should consider for inclusion in the peak demand reduction scheme?*

Cogeneration, especially utilising biogas, is a key opportunity to reduce the peak demand on the electricity network. The gas network has a natural energy storage capacity that has the potential to reduce peak demand on the electricity network. Therefore, the utilisation of cogeneration facilities, especially from biogas, should be recognised.

*Should location-based multipliers or activities that are specific to certain locations be considered?*

Yes. This is the only way to direct investment where there is value for the consumer from reduced network investment. We would encourage collaboration with the AER to potentially link the price for demand reduction to the capital cost of planned network augmentation in particular locations. This would ensure there is 'competition' to the traditional network expansion activities and will ensure value to consumers. For example a bioenergy project may be marginally viable and so will not proceed, however it has the potential to reduce a \$2M network augmentation for at least 10 years, the bioenergy project should be able to capture some of that value so that it can be viable. Realising a net benefit to electricity customers, jobs and the environment.

Thank you for the opportunity to provide this submission

Yours sincerely



Shahana McKenzie, CEO Bioenergy Australia