



QUEENSLAND FARMERS' FEDERATION

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Submission

26 August 2019

Energy from Waste Paper
Office of Resource Recovery
Department of Environment and Science
GPO Box 2454
BRISBANE QLD 4001

Via email: wastepolicy@des.qld.gov.au

Dear Sir/Madam

Re: Energy from Waste Policy: Discussion Paper for Consultation (July 2019)

The Queensland Farmers' Federation (QFF) is the united voice of intensive, semi-intensive and irrigated agriculture in Queensland. It is a federation that represents the interests of peak state and national agriculture industry organisations, which in turn collectively represent more than 13,000 farmers across the state. QFF engages in a broad range of economic, social, environmental and regional issues of strategic importance to the productivity, sustainability and growth of the agricultural sector. QFF's mission is to secure a strong and sustainable future for Queensland farmers by representing the common interests of our member organisations:

- CANEGROWERS
- Cotton Australia
- Growcom
- Nursery & Garden Industry Queensland (NGIQ)
- Queensland Chicken Growers Association (QCGA)
- Queensland Dairyfarmers' Organisation (QDO)
- Australian Cane Farmers Association (ACFA)
- Flowers Australia
- Pork Queensland Inc.
- Queensland United Egg Producers (QUEP)
- Queensland Chicken Meat Council (QCMC)
- Bundaberg Regional Irrigators Group (BRIG)
- Burdekin River Irrigation Area Irrigators Ltd (BRIA)
- Central Downs Irrigators Ltd (CDIL)
- Fairbairn Irrigation Network Ltd
- Mallowa Irrigation Ltd
- Pioneer Valley Water Cooperative Ltd (PV Water)
- Theodore Water Pty Ltd.

QFF welcomes the opportunity to provide comment on the 'Energy from Waste Policy: Discussion Paper for Consultation'. QFF provides this submission without prejudice to any additional submission from our members or individual farmers.

The united voice of intensive agriculture



Background

Queensland's 24,200 farm businesses provide environmental services and land stewardship to over 85 per cent of the state's land area. Our farmers produce the highest quality food, fibre and foliage and account for approximately 24 per cent of Australia's overall production value. Over the past few years, the sector has been worth \$18.5 to \$20 billion annually to the Queensland economy, accounting for about 17 per cent of state's total exports and employing over 300,000 Queenslanders across the whole food supply chain. The strength of the domestic marketplace and particularly the growing export markets is supported by the 'safe, clean and green' character of Queensland's primary produce.

Queensland's agricultural sector has an established history of managing its waste streams effectively, ranging from innovative value-add products on-farm to combat food waste, organics and nutrient recycling, and bioenergy production. The return of valuable nutrients back to soil as part of a holistic and effective resource management strategy is essential. For example, Queensland's farmers already divert their organics resources to composting, direct land application and energy generation.

Many farmers and agricultural processors have a long history of using organic waste streams such as straw and trash by incorporating it into their soils to enhance soil carbon or for bioenergy production. However, there are new 'biofuture' opportunities arising for the sector to value add to resource streams and agricultural by-products to realise bio-economy efficiencies and maximise financial returns. Research and governments are driving changes to policy and funding arrangements to maximise these opportunities which strive to move organic residuals and agricultural by-products up the value chain and, in certain cases, away from the existing circular economy model; essentially valorising its waste streams.

Queensland's agricultural sector is the largest provider of base-load renewable energy, including energy from waste as defined under the *Renewable Energy (Electricity) Act 2000 (Cth)*, contributing over 1,200GWH of renewable energy annually (both behind the meter and for export to the grid).

Scope of Discussion Paper

The discussion paper only focuses on household waste and energy from waste technologies administered/provided by local government or private waste management companies. This assertion is supported by the limited stakeholder consultation identified in Appendix 1. If this is indeed the case, then the limited scope of this document must be explicit at the start.

The agricultural sector (agri-processors in particular) are significant stakeholders in the energy from waste, bioenergy and renewable energy sector. This document fails to identify them or acknowledge the relationship between energy from waste, bioenergy and renewable energy, nothing that some technologies and applications meet the definition of all three sectors.

As an example, bioenergy includes the energy derived from the biomass components of an energy source mentioned in any of paragraphs (i) to (s) of the definition of eligible renewable energy source (as defined within subsection 17 (1) of the *Renewable Energy (Electricity) Act 2000 (Cth)*).

If bioenergy sources or significant resource and by-product producers such as agriculture are to be included, then further stakeholder consultation is essential. QFF recommends as a minimum, Bioenergy Australia; Biofuels Association; Macadamias Australia; and the Australian Sugar Milling Council.

QFF acknowledges the Energy from Waste sessions conducted by ARUP to present the Discussion Paper and the acknowledgement of regional Queensland, which is usually omitted in state government consultation. QFF also acknowledges the work and insights provided in the Discussion Paper and broadly accepts the proposed principles.

Acknowledgment of Heat Values and Liquid Fuels

In many of the existing agricultural and agri-processing facilities, the value of heat and steam is already well known and recognised. Any Energy from Waste Policy must recognise the contribution of heat and fuels (liquid and solid) – QFF welcomes the inclusion of Table 2 in the Discussion Paper.

The value of any electricity and heat generated can make a substantial difference to the ongoing economics of a waste to energy generation facility, but the practical uses of the two energy forms are very different. Electricity is easy to transmit from the point of production to the point of use, as long as an appropriate local grid connection is feasible. In contrast, heat energy needs a user close to the point of generation, otherwise the transmission losses (and infrastructure costs) quickly become prohibitive.

The value of that electricity depends on the contract struck with the Australian Energy Market Operator (AEMO), established in 2009 to manage the Australian National Electricity Market (NEM).

Retail electricity prices are estimated using a ‘building block approach’ incorporating each of the following cost components:

- Wholesale electricity market costs
- Network service provider costs
- Cost of green schemes (for example, those under the Renewable Energy Target)
- Cost of state and territory energy efficiency schemes, if any
- Cost of state and territory feed-in tariff schemes
- Market system operator charges
- Retailer costs and margins
- GST.

The wholesale market costs faced by retailers include:

- Spot energy cost as paid to AEMO adjusted by the applicable transmission and distribution loss factors
- Hedging costs around the spot energy price consisting of swaps, caps and floor contracts.

Spot energy exposure is minimised by retailers but cannot be completely avoided due to the variability of the retail load supplied.

Estimating the value of any heat generated is much more difficult. Firstly, the useful heat generated is usually dependent less on how much heat the facility can produce but how much heat the receptor requires, and how close that receptor is to the generating point. Whilst electricity is the same regardless of how it was generated, there are endless degrees of heat, depending on the temperature and pressure of the water or steam (or other fluid) used; and few heat-producing waste treatment facilities are designed as heat-only plants, instead operating as combined heat and power plants. Thereby, within certain limits according to the plant design, the amount of heat generated can be varied according to demand, with the balance converted to electricity.

The current Discussion Paper does not acknowledge the complexity or impact of the National Electricity Rules and other regulation on the development of the sector.

Planning Issues

In order to maximise efficiencies, planning to facilitate co-location of ancillary activities and aligned plant would need to occur. Within the current planning framework and its substantial limitations, this is almost impossible. The co-location of production, processing and energy facilities on farm is becoming more difficult under local government planning. A current example is of a significant horticultural producer and processor who wanted to create an agri-precinct including the co-location of a bioenergy

facility which would provide heat and both behind the meter as well as export electricity. This was refused by their local council.

The inconsistency of planning instruments and lack of ‘planning’ transparency across local government areas presents a considerable barrier to business and a barrier to realising ‘products being processed and utilised closer to the point of generation’ and where ‘regional hubs and precincts can provide economies of scale’.

Duplicate and Retrospective Regulation of Existing Facilities

QFF remains deeply concerned of further duplicative and retrospective regulation of the existing energy from waste/renewable energy facilities. For example, Queensland has 14 AD facilities registered with the regulator (Petroleum and Gas Inspectorate, Department of Natural Resources Mines and Energy) who regulate the *Petroleum and Gas (Production and Safety) Act 2004* and subordinate regulation. This is despite Queensland’s unique position as a substantial agricultural producer and, also given at face value, policy support under the 'Biofutures' agenda at state level and the Food Waste Strategy at federal level, amongst other policy portfolios.

The Queensland Government has failed to recognise the potentially significant contribution of AD in achieving the desired outcomes of so many policy agendas, such as managing greenhouse gas emissions, increasing renewable energy generation, diverting organic waste streams from landfill and moving organic resources towards a more circular economy approach.

On a small scale, the agricultural sector and food and beverage producers have recognised the substantial opportunities to reduce emissions by recycling methane-producing wastes such as manures and food processing wastes; and the ability of AD to offset high peak electricity prices or negate obligations under the Safeguard Mechanism. However, these incentives are insufficient on their own to stimulate Queensland’s AD sector and are now being eroded by excessive state-based regulation.

In November 2018, changes to Queensland’s Environmental Protection Regulation 2008 (EP Reg), introduced a licence requirement for AD under a revised Environmentally Relevant Activity (53 – Organic Material Processing). The EP Reg is administered by the Department of Environment and Science. The revised ERA (and licence requirement) rightly excludes on-farm AD and AD plants associated with wastewater treatment and meat processing; however, farms seeking to utilise AD will need economies of scale which may require ‘importation’ of other organic wastes – this would immediately trigger the requirement for an ERA.

Food and beverage manufacturers and other sectors with AD plants accepting more than 200t of organic material annually, also now need an Environmental Authority with an associated annual fee of \$4,337.60 (correct up until 1 July 2019). This is not including the application fee and associated costs of making the application or meeting any requirements imposed by the conditions of the Environmental Authority. This is also in addition to current regulation and fees imposed onto AD facilities by the Department of Natural Resources, Mines and Energy. It remains to be seen how the increased regulation, administrative burden and annual government charges will impact the 14 existing AD facilities or future investment plans for other facilities in Queensland, but it will more that negate any current savings from electricity costs and possibly heat.

QFF wants to see clear objectives pertaining to the role of food waste collections and the management of other high-greenhouse gas emitting organic waste streams. There also needs to be recognition of biogas (biomethane etc.) as a ‘low regret option’ for decarbonising the gas grid and potentially stimulating a supply market, be it small, to compete with CSG. If this would stimulate lower gas domestic prices is open for debate and would be dependent on the level of supply which, in the first instance, is likely to be limited to being site specific. Many countries do export gas from ADs into their

national gas grid and utilise the heat generated to fuel industrial processes or transfer heat energy to cooling.

To build investor confidence in the AD industry and the required organic supply chain, the Queensland Government must recognise the contribution of organics and the bioenergy sectors (including biomass, biogas, biofuels and bioliquids) to the renewable energy agenda and our 2030 targets. It should not be just about solar and wind.

We need to start to critically explore how current business models compare between the waste management, agricultural and wastewater sectors and where can we find synergies or make the necessary amendments. We also need regulation appropriate for innovations in microbiological process and AD technologies which does not impede the sector. We need to continue to provide research and investment into the biofutures agenda to value-add to these processes, for example to determine if non-biomethane end points deliver more value from current or future AD assets in Queensland.

Bioenergy Estimates

QFF notes that the Australian Bioenergy Roadmap¹ acknowledged that bioenergy sources supplied 0.9 per cent of Australia's electricity generation in 2010. The Roadmap reports that bioenergy could potentially provide from 19.8 per cent to as much as 30.7 per cent of Australia's electricity requirements by 2050.

A number of factors could be considered to help bioenergy meet its potential. These include²:

- A secure demand for bioenergy products, which will underpin investment for feed supply and bioenergy processing.
- A regime that places costs on carbon emissions across each of the areas in which bioenergy can contribute (e.g. heat, power, transport fuels, chemicals).
- Further understanding of the environmental and social costs and benefits of using different types of bioenergy in Australia.
- Local feedstocks with technical characteristics and costs that are well understood.
- Mapping of potential feedstock volumes and thus actual supply (fuel and electricity) that Australia can expect from biomass.
- Mapping of current industry and technologies being utilised, to provide a baseline against which growth may be measured.
- 'Buy in' from market drivers such as oil majors and car manufacturers.
- Greater understanding that some new tree crops can be integrated into current agricultural production systems to maintain or increase agricultural production, produce biomass and provide benefits such as soil protection.
- Integration of bioenergy production with production of co-products such as foodstuffs, chemicals and biochar.

Many of the existing REC registered thermal units are sugar mills. There are 24 sugar mills in Australia, 23 of which are in Queensland. Australian sugar milling is a diversified agricultural and regional manufacturing industry. Sugar mills utilise their waste streams with bagasse used to generate electricity and steam. Most of the boilers in the industry are grate fired. All mills ensure that they have capacity to move between biomass and coal in some instances, which tends to keep them in the grate boiler technologies. The 23 Queensland sugar mills export additional electrical capacity to the grid.

Invicta, Pioneer and Victoria Mills have upgraded cogeneration facilities to increase their export capacity. Pioneer's cogeneration plant is the largest biomass generator in Australia. Surplus bagasse

¹ Australian Bioenergy Roadmap - <http://www.cleanenergycouncil.org.au/bioenergy/>

² Bioenergy Australia. (2010) Overview of Bioenergy in Australia. Australian Government RIRDC. <http://www.agrifutures.com.au/wp-content/uploads/publications/10-078.pdf>

produced in our Burdekin mills during the crushing season is stockpiled on large, specially designed pads at Pioneer to enable the cogeneration facility to continue to operate outside of the crushing season.

Invicta, Isis and Rocky Point Mills all provide over 30MW generating capacity. Subject to the boiler design and mill operations, approximately 15 per cent of the original energy in the bagasse is being converted into electricity and exported to the grid. When the mill is not crushing, approximately 20 per cent of the original energy in the bagasse is converted into electricity and exported to the grid.

The RET provides an incentive for increasing energy efficiency at sugar mills. By storing and managing bagasse out of season, and increasing boiler efficiencies, mills have increased electricity generation, supplying their neighbouring communities. However, the efficiency of most mills could be improved by finding a homogenous feedstock for all-year energy production.

Sugar mills play an integral role in a low carbon economy into the future, and currently represent an under-utilised energy resource for bioenergy. The sugarcane plant is one of the world's most efficient converters of solar energy into chemical feedstock, making it suitable to derive a range of products such as electricity and ethanol; and into the future, other biofuels and biochemicals. Sugar milling companies have the capacity to significantly expand their production of renewable electricity and biofuel, with no expansion to the existing industry footprint. These expansions can have payback periods in excess of 10 years and as such, require the right policy settings to provide the necessary investor confidence.

Sugar mills have been generating renewable energy from waste sugarcane fibre for approximately 100 years in Australia, meeting their own electricity needs and exporting excess electricity to local networks. This capacity has been expanded since the Commonwealth Government's Mandatory Renewable Energy Target (MRET) was introduced in 2001, so that all sugar mills can export surplus electricity into regional distribution networks during the crushing season (June to November). There are some cogeneration projects that now generate for 50 weeks of the year and are base-load generators in terms of reliability.

In 2014, sugar mills in Queensland produced almost 1,000 GWh of electricity. This expanded cogeneration capacity increases regional energy security and reduces the Queensland Government cost of Community Service Obligations. With the right policy settings, the potential contribution to renewable energy (and firming of that energy) could be substantially expanded.

It is essential that the Draft Plan (Resource Recovery Industries) and associated documents such as the Waste Strategy and Energy from Waste Policy supports the agricultural and agri-processing sectors to grow, diversify and make additional use of agricultural by-products. This requires the Queensland Government to remove existing constrainers such as excessive regulation, duplicative regulation (such as in the case of Anaerobic Digestions being included into ERA53) and provide funding opportunities from levy funds beyond simply the local government, and waste management and recycling sectors.

Finally, QFF requests that any future energy from waste policy aligns with other government policy including, but not limited to the Biofutures Plan, Resource Recovery Plan, Powering Queensland Plan, The Powering North Queensland Plan, Queensland Renewable Energy Target; and aligns with the Renewable Energy Zones (identified by AEMO), and Clean Energy Hubs.

If you have any queries regarding this submission, please do not hesitate to contact Dr Georgina Davis at georgina@qff.org.au.

Yours sincerely

Travis Tobin
Chief Executive Officer