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Submission

24 February 2017

Mr Warwick Anderson
General Manager, Network Regulation
Australian Energy Regulator
GPO Box 3131
CANBERRA ACT 2601

Via email: DM@aer.gov.au

Dear Mr Anderson

Re: Submission on the Demand Management Incentive Scheme and Innovation Allowance Mechanism, Consultation Paper (January 2017)

The Queensland Farmers' Federation (QFF) is the united voice of intensive agriculture in Queensland. It is a federation that represents the interests of 15 of Queensland's peak rural industry organisations, which in turn collectively represent more than 13,000 primary producers 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 primary producers by representing the common interests of our member organisations:

- CANEGROWERS
- Cotton Australia
- Growcom
- Nursery & Garden Industry Queensland
- Queensland Chicken Growers Association
- Queensland Dairyfarmers' Organisation
- Burdekin River Irrigation Area Irrigators
- Central Downs Irrigators Limited
- Bundaberg Regional Irrigators Group
- Flower Association
- Pioneer Valley Water Board
- Pork Queensland Inc.
- Queensland Chicken Meat Council
- Queensland United Egg Producers
- Australian Organic

QFF welcomes the opportunity to provide comment on the Australian Energy Regulator's (AER) consultation paper 'Demand Management Incentive Scheme and Innovation Allowance Mechanism'. QFF understands that the objective of the Demand Management Incentive Scheme (DMIS) is to provide electricity distribution businesses with an incentive to undertake efficient expenditure on non-network

options relating to demand management. The separate innovation allowance mechanism's (IAM) objective is to provide distribution businesses with funding for research and development in demand management projects that have the potential to reduce long term network costs. This submission focusses on the DMIS.

The Australian Energy Market Commission (AEMC) concluded that demand management could save between A$4.3 billion and A$11.8 billion over the next 10 years. One of the key reforms the AEMC proposed to unlock these savings was incentives for 'poles and wires businesses' (energy distribution and transmission companies) to encourage demand management that would save consumers money but also avoid further infrastructure development.

QFF provides this submission without prejudice to any additional submission provided by our members or individual farmers.

Summary

QFF and its members are significantly concerned about the unsustainable increase in electricity prices in Queensland which are damaging on-farm productivity and critical export markets. The National Electricity Objective is to "*promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to price, quality, safety, reliability, and security of supply of electricity*".

QFF does not believe that the National Electricity Objective is being realised. Under current market governance arrangements, existing loopholes, particularly those around the 'rateable asset base' are enabling price gouging by network businesses and preventing a fair and effective pricing structure for consumers.

There is a significant volume of literature pertaining to the 'utility of the future', where it is acknowledged that we must move away from providing electricity as a commodity, to a structure where regulators and industry directly connect revenue requirements and earning to performance (including innovation and the development of services) and not to infrastructure/expenditures. The DMIS and IAM proposal supports these objectives.

Background

Over 307,000 people are directly employed in agriculture across Australia, of which over 55,000 are employed in Queensland[1] representing the largest employer in rural and regional communities. Australia's 135,000 farmers produce enough food to feed 80 million people providing 93 per cent of the domestic food supply, and support an export market valued at more than AU$41 billion per annum (over 13 per cent of export revenue)[2]. With population growth and rising personal income, the emerging middle class in Asia provides the major market for over 60 per cent of Australian agricultural exports[2].

In supplying the increasing demand for food in the region, Australia faces some serious competition and major institutional impediments. Rather than to rely on global markets, most of the world's wealthiest industrialized countries have sought to protect their farmers from competition through maintaining high import tariffs, import quotas and direct price support-mechanisms. Australia does not support this approach, meaning our farmers are at a global disadvantage. The sector also continues to experience long-run price declines in real terms for a number of commodities and cost-price squeeze pressures.

[1] Queensland Treasury and the Department of Education and Training, Jobs Queensland Occupational Data, 2016.
[2]Australian Bureau of Agricultural and Resource Economics and Sciences. (2014). Agricultural Commodity Statistics.

QFF notes that electricity prices in Australia are higher than overseas jurisdictions[3], disadvantaging our commodity exports on the global market. A communique from Australia's Agricultural Industries Electricity Taskforce (March 2015) detailing this issue and impacts to overall productivity is included as an attachment to this submission (see Attachment 1).

More than any other sector of the economy, agricultural productivity in Australia is highly dependent on seasonal variations in rainfall and access to a reliable water supply which in most cases, can only be secured through a sustainable electricity supply. Changes to weather patterns are influencing both the intensity and duration of rainfall and thus redefining the suitability of many areas and commodities for farming; and resulting in many irrigators having higher-than-average load factors compared to other energy consumers. For some farmers, changes to rainfall patters and water shortages will inevitably mean surrendering their farms as production falls and the level of farm indebtedness becomes unsustainable. QFF considers that the government therefore has a role to assist agribusinesses to manage this risk and ensure future food security. A critical tool for this is the ensuring that electricity is fairly priced.

Significant investments in infrastructure and technology, and growing innovation across the agricultural sector will provide some opportunity, but as agriculture is and will always remain relatively higher risk than other sectors, it often fails to attract the required investment capital. Historically, farmers have responded to their eroding terms of trade by increasing productivity – in many cases this requires access to water which in turn can only be achieved and guaranteed by the corresponding access to power.

QFF believe there are opportunities in:

- the recent amendment to clause 6.6.4 of the National Electricity Rules and the resulting re-development of a new demand management incentive scheme and innovation allowance scheme;
- the recently released COAG Energy Council Energy Market Transformation Project on stand-alone energy systems;
- the AEMC Electricity Network Economic Regulatory Framework Review;
- the recently released preliminary report for the Independent Review into the Future Security of the National Electricity Market (NEM); and
- the rapid development of new technologies including, but not limited to battery storage.

The uptake of domestic air-conditioning is widely recognised as a leading factor in peak demand growth. A report for the AEMC Power of Choice review identified climate as a driver of peak demand growth, whereas population growth, household size and household income are not[4]. Similarly, the Productivity Commission (PC) inquiry into electricity networks highlighted the doubling of household air-conditioning stock over 10 years to 75per cent of households in 2008[5]. This rapid increase in the up-take of air-conditioning systems led to a significant increase in network investment commencing in 2004.

[3] CME. (2012). Electricity Prices in Australia: An International Comparison. A Report to the Energy Users Association of Australia.

[4] Ernst & Young, Rationale and drivers for DSP in the electricity market – demand and supply of electricity, AEMC Power of Choice, 20 December 2011

[5] See Figure 9.7, page 350, Electricity Network Regulatory Frameworks, Productivity Commission Inquiry Report, Volume 2, No. 62,9 April 2013

Demand management opportunities

Demand response and energy efficiency programs are complementary: energy efficiency reduces both energy use and peak demand while demand response provides additional peak demand reductions.

QFF notes the work undertaken by the American Council for an Energy Efficiency Economy (ACEEE) which has evaluated the energy savings from utility-sector energy efficiency programs[6]. In 2015, the ACEEE estimated that these programs saved about 200 billion kWh, more than 5 per cent of retail electric sales in the United States that year (based on an analysis of data through 2014 and updated to include 2015 savings). In some leading US states, the savings from these programs exceed 10 per cent of retail electric sales and is anticipated to reach more than 20 per cent by 2020.

Energy efficiency technologies also substantially reduce peak energy demand. The ACEEE recently reviewed data[7] reported to the US Energy Information Administration (EIA) on energy and peak demand savings for 25 program administrators (those reporting the highest total energy savings in 2015 and that together account for more than half of incremental energy savings in 2015). They determined that for each one per cent reduction in electric sales for a utility, on a median basis, peak demand reductions from efficiency programs are 0.66 per cent of peak demand for that utility. If these trends hold for additional utilities and future years, it would mean that for a utility that reduces retail sales by 15 per cent, the peak demand savings will be around 10 per cent.

The US utilities have been running demand response programs for a decade or more, and have been assessed in regards to how much these programs have actually saved. Potential peak demand savings refers to the total demand savings that could occur at the time of the system peak hour assuming all of an individual utility's in-place demand response strategies are used. Actual peak demand savings are demand reductions achieved by demand response activities, measured at the time of the company's annual system peak hour. Actual savings address the fact that many utilities did not activate all demand response capability in 2015. The ACEEE analysis considered all utilities that reported potential demand response savings of 200 MW or more – a total of 28 utilities. These utilities represent 64 per cent of the potential demand response savings reported to EIA, and 58 per cent of the actual reductions reported to EIA.

Clearly, demand management programs have proven opportunities and have the potential to deliver substantial benefits to the Australian NEM.

Demand management and electricity prices

There are a number of questions surrounding the relationship between demand reduction and electricity prices for regional areas, where high prices provide incentives to use the network less must be answered/modelled. This ongoing uncertainty is resulting in more agribusinesses, amongst others, choosing to leave the current grid network, which concentrates further impacts for those who remain.

An opportunity may exist to provide localised demand charges to target specific areas where the network is constrained rather than applying them uniformly across the state. In constrained areas, demand curtailment and management programs along with price signals could assist in reducing peak demand and network investment. In areas where there is no constraint, demand charges may simply apply costs with no appreciable network benefit.

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[6] American Council for an Energy Efficiency Economy (ACEEE). Demand response programs can reduce utilities' peak demand an average of 10%, complementing savings from energy efficiency programs 'http://aceee.org/blog/2017/02/demand-response-programs-can-reduce

[7] U.S. Energy Information Administration. Electric Power Sales, Revenue and Energy Efficiency. See https://www.eia.gov/electricity/data/eia861/

A report by Sapere[8], commissioned by QFF member CANEGROWERS, critically examines two network tariff proposals put forward by Ergon Energy[9]:

- **Summer peak (energy and demand) tariffs** apply hefty penalty rates to businesses using a lot of power during weekday business hours and for residential customers using a lot of power during afternoons and early evening, every day of the week. This benefits off-peak users, but is a cost to businesses and families who cannot easily change the times they use electricity.
- Under **inclining block tariffs**, rates go up in three steps as usage increases. These do not reflect network supply costs but instead unfairly penalise above average users of electricity and reward lower than average users. Under this scenario larger families, more energy intensive businesses, including irrigators, and those without solar panels would pay more.

The report concludes that Ergon is apparently trying to avert a hefty network expansion bill with these penalising tariffs which aim to reduce electricity usage, despite Ergon's own data showing that there is a lot of spare capacity in the network. Indeed, Ergon's *2016 Distribution Annual Planning Report*[10] shows that 98 per cent of the low voltage network has enough spare capacity to meet all forecast peak demand growth for the foreseeable future.

The report also concluded that the network congestion data used by Ergon in its tariff proposal overstates congestion by a factor of approximately 375. The scale of this pricing distortion adding up to $1.8 billion over five years. QFF understands that the situation facing regional Queenslanders getting their power from Ergon is not an isolated example. The same flawed approaches are being applied to Energex (also in Queensland) and in other parts of the NEM.

The report also concludes:

> *Marginal network capacity for price setting purposes may be defined as that part of capacity where even small increases in maximum demand can trigger a requirement for future capacity augmentation to maintain firm supply. Infra-marginal network capacity is everything up to the last unit of demand that is met by current capacity.*
> *Ergon's Tariff Statement erroneously uses a definition of marginal network capacity, so far unchallenged by the Regulator, of 95 per cent of maximum annual demand at each of Ergon's zone substations (ZS).*
> *While peak demand growth has slowed since the Global Financial Crisis, until recently Ergon and other networks kept investing in new network capacity, creating spare capacity*.

These findings indicate that demand constraint is being actively used as a pretext to inflate electricity prices. As such, QFF is sceptical that demand management opportunities, whilst proven to be highly effective in overseas jurisdictions, may not actually reduce electricity prices or have applied benefits to electricity consumers.

Future tariffs

The significance of agricultural input prices to farmers' choices cannot be overstressed. The responsiveness of farmers to changes in input prices is significant. Not only to output supply (production levels), but also to the productivity and thus profitability of farmers, the welfare of consumers, and the export earnings of Queensland and Australia.

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[8] Sapere. (2016). *Errors in Australian Energy Regulator's Draft Decision on Ergon Energy's 2016 Tariff Structure Statement*, November 2016. Commissioned by Canegrowers. Launched on 15 February 2017. See http://files.canegrowers.com.au/queensland/web-CANEGROWERS-Sapere-Report-Launch-document.pdf

[9] Ergon Energy is a Queensland-based government owned corporation. It provides electricity distribution services and retail services to regional Queensland.

[10] Ergon Energy (2016). Distribution Annual Planning Report. DAPR covers a five year period from 2016-17 to 2020-21. See https://www.ergon.com.au/network/network-management/future-investment/distribution-annual-planning-report

Future network pricing structures must introduce incentives for efficient investment in the grid into the future, which is commonly accepted to be an economically efficient pricing structure that charges mainly for the use of peak capacity, and avoids purely fixed charges for access to the grid. There must be due consideration and investigation into the mechanisms for encouraging farms to maintain their grid connection into the future whilst still encouraging the efficient use of decentralised power generation (including but not limited to solar and diesel) and storage to minimise overall costs of using power (particularly peak); whilst also reducing the network costs associated with supply peak demand.

Current demand-side tariffs simply focus on peak use from individual users, rather than network peaks, signifying that they are more about revenue security for the network provider than economically efficient tariff structures. This conclusion is strongly supported by the Sapere Report analysis.

QFF suggests the formulation/design and communication of new tariffs (for all users) which promote a balance between centralised and decentralised power supply for regional areas that reduces overall costs for both users and the network supplier. Tariff design must also take into account the wider policy opportunities for minimizing unintended consequences or negative behaviours which would undermine the reduction of greenhouse gas emissions, ensuring a reliable energy supply, and its impact on economic activity (energy markets and their regulation). There is customer uncertainty regarding the initial impacts of demand-tariffs, many of which are anticipated to be negative.

Whilst the electricity distortion providers (Ergon and Energex) do provide incentives for demand management initiatives at customer level, these are limited in their approach and eligibility for businesses. For example, Energex currently offers up to $185/kW for energy efficiencies and up to $41/kVAr for power factor correction for businesses managing their peak demand in a limited number of suburbs. Ergon Energy offer similar schemes in limited areas and focus on directing businesses to demand management tariffs – which are not appropriate for a range of agricultural enterprises who have no control over the seasonal and/or time of use of electricity due to climatic, crop and water licence requirements.

Current issues negatively impacting a move to demand management incentives and innovation

The recent events in South Australia have placed a degree of perceived urgency on maintaining energy security. QFF notes that Queensland's Transmission provider (Powerlink) and ElectraNet are proposing a new Queensland to South Australia Interconnector.

Powerlink is proposing that the RIT-T consultation process for a new interconnector be completed by the end of 2017, with energisation of any new interconnection possibly as early as 2022. As this project could be largely completed by the end of Powerlink's 2018-22 regulatory period, it is considered reasonable that these recent developments, which reflect the industry's response to customer and consumer concerns, be accommodated as a contingent project in Powerlink's Revised Revenue Proposal submitted to the AER in December 2016.

The Queensland to South Australia Interconnection (Queensland Component) option would require Powerlink to establish new 330kV switch-bays at Powerlink's Bulli Creek Substation and construct approximately 100km of new 330kV double circuit line from Bulli Creek to the Queensland/NSW border area west of Goondiwindi. The proposed contingent project is estimated to cost approximately $120 million. It does not include any costs for works outside Queensland.

QFF understands that the RIT-T applies to investments in new electricity transmission assets in the NEM where the estimated capital cost exceeds $6 million, subject to certain exceptions. It seeks to ensure

that networks consider all viable options, in consultation with stakeholders, before erecting more poles and wires; for example, demand management alternatives.

QFF is aware that the review of the RIT-T was released on 6 February 2017, and concluded that the RIT-T framework is still appropriate. QFF also notes the current independent review of the NEM (by Dr Alan Finkel) and the review of emissions reductions policies in 2017. It is important that the RIT-T process reflects the decisions taken about the strategic direction of the NEM under a broader post-2017 policy framework.

QFF hopes that the RIT-T is justly an appropriate assessment of strategic interconnection for the development of a truly national, efficient interconnected NEM and therefore will provide appropriate assessment for the contingent project proposed by Powerlink in its Revised Revenue Proposal.

When properly implemented, regulatory tools such as the RIT-T are an important part of such an approach which should permit for proper assessment and scrutiny of proposals. Whilst QFF acknowledges the issues arising out of the South Australian blackout, the sense of urgency surrounding recent events must not be used to hurry decisions about significant infrastructure investments that will impact electricity prices for the forecast life of the asset, which could be in excess of 50 years. Demand management considerations must be part of the project feasibility assessment.

With the increasing rate of technological change and associated market development (and rule changes) which will be necessary, alternatives that involve less long-lived capital investment may provide the required flexibility that deliver the required level of network services (including reliability) at a cost acceptable to consumers for the service they receive.

Should the Queensland to South Australia Interconnection proceed, QFF recommends consideration of a contestable interconnector service provision which could require some independent functions to be established, to enable Powerlink and others to compete fairly.

One approach could be a requirement for Powerlink to assign an independent technically qualified party to conduct the tender process and select a service provider. The National Electricity Rules would need to provide principles to ensure a fair and accountable process. Once a service provider has been selected and commercial terms settled for the provision of the service, then Powerlink would assume contractual and network pricing responsibilities for the interconnector.

A contestable framework for the provision of interconnector augmentation can be practically implemented and may ensure that future infrastructure is designed, constructed and operated at the lowest possible cost to customers.

Security and reliability

Farmers make immediate choices in response to shocks and longer term decisions based on their expectations. Part of these expectations depends on prospects for transition to new energy sources and the impact of government choices with respect to tariff design.

The Queensland Government and the AER must be agreeable to be more interventionist as it seeks to resolve tensions in the energy sector but, as it does so, it faces great challenges with regard to policy coherence. Input prices provide valuable information for the formulation of government policies and programs aimed at promoting efficiency, stability, growth, and equity in the agricultural sector. Energy costs are of utmost concern not just to farmers, but to consumers who face these costs embedded in the price of their food.

QFF recognises that network assets are very long-life assets and the consequences of under-building assets can be catastrophic; and that there is a genuine need to replace ageing infrastructure. However, regulatory decisions and overinvestment in both generation and distribution infrastructure have been based on incorrect forecasts of rising demand; despite demand actually falling and all indications that it may fall further, particularly as larger users leave the grid. QFF recognizes that whilst grid connections are not always reliable in rural and remote areas, they do provide 'back-up' power for farmers, their families and the broader community.

A significant issue for agribusinesses, particularly processing, is the reliability of supply. Stakeholder feedback to QFF has highlighted the decreasing electricity-grid reliability experienced by many farmers and ancillary activities, such as processing and pumping of water. In some regional areas, reliability has been an ongoing issue and, in some case, is decreasing. Disruption in electrical supply results in processing down-time, and unnecessary wear and tear on machinery, reducing the life-span of critical assets and infrastructure including energy efficiency measures. Despite the increasing costs of network infrastructure as a proportion of electricity costs, there is no corresponding increase in reliability. In other words, the standard of service is not commensurate with the cost.

This factor is further informing decisions to go off-grid and impacting the long-term viability of the electrical distribution network in these regional areas particularly as distributed energy storage opportunities present. Security and reliability have historically been a significant driver in electricity prices in Queensland and whilst consumers value reliability very highly, they may not wish to pay for this; and with the increasing commerciality of off-grid generation technologies, the decision-making process to move off-grid for some is becoming more rationalised and more attractive.

Modelling undertaken by Energeia[11] has concluded that around 40 small towns, particularly those at the edge of the grid, will find it more cost effective within a few years to cut the main link and provide the power with local generation, principally solar and battery storage. A growing number of larger, regional towns that will fit this category by 2025; subject to amendments to regulation to allow the true cost to be reflected. One of the biggest barriers to towns leaving the grid is the cross-subsidy paid to provide networks to regional towns. This is particularly visible in Queensland where in the Ergon network, the average network costs alone to regional towns amount to around 20c/kWh.

QFF recognizes the potential of a micro-grid model as a 'safety net' and cost-effective approach to increase the reliability of electricity supply above current grid levels and which can be accompanied by cost measure benefits of 'local energy trading system' – where utilities can provide customers with solar and storage and allow their output to be traded in a suburban network. Such approaches require significant changes in the way incumbent utilities (e.g. Ergon), manage their business models and will require networks to look to a more 'distributed' model, while the implications for centralised generation, and for retailers, will also be significant. As such, QFF suggests that there is significant opportunity for further investigation into the consequences for regional communities regarding these issues.

Technological change and falling cost of capital have introduced opportunities for demand management technologies, decentralized solar power generation and battery storage, and also diesel generation on many farms to reduce peak demand and therefore reduce demand for investment in increased network capacity. QFF understands that whilst peak demand drives investment, aggregate demand is important for recovering costs, because you recover over the total demand, and that determines prices. Energex for example, has previously noted that "deteriorating network utilisation as total energy consumption has moderated is forcing up network prices as the costs of providing, operating and maintaining the network are spread over a lower consumption base whilst maximum demand remains at record

[11] Energeia. (2013). Over the Edge: The Australian Outlook for Embedded Microgrids to 2027.

levels"[12]. The current policy-approach attempts to use tariffs to achieve 'actual' change; however, this is a blunt instrument if not coupled with appropriately designed demand and supply-side policy. This may accelerate the up-take of off-grid or behind-the-meter technologies exacerbating the above consequence. QFF is concerned that the result will be higher fixed costs, which will further reduce the incentives for energy efficiency and demand management.

QFF believes that targeted and appropriate demand management strategies can solve the energy tri-lemma of affordability, reliability and sustainability. It is imperative that the energy utilities support consumers to save energy and shift demand, instead of building expensive new energy supply.

A further opportunity exists with the rapid change in hardware and software technologies that will provide direct access to the market for regional customers, particularly in constrained or fragile network areas. Peer-to-peer trading and virtual net metering will engage regional electricity customers in supply and demand matching opportunities with a potential additional revenue stream available to the networks.

Such a model would offer the potential for customers to re-engage with the electricity networks as a 'transporter of electricity' paying a small amount for the use of the network and with actual localised demand capacity reflected in use-of-network charges.

Concluding comments

The greatest volatility in the current electricity system occurs from electricity demand and not generation. Demand management processes and technologies are well proven, including mechanisms such as off-peak water heating or pool pump use on a load control tariff.

QFF notes, that system-wide, maximum demand is driven by extreme temperatures. Agricultural energy demand for the intensive agricultural applications, such as irrigation, does not drive or correspond to peak network demand. Yet, agricultural customers are being unfairly targeted to pay higher tariffs/costs.

Network businesses have long been supposed to choose demand management when it costs less than network upgrades, but regulations have discouraged them from doing so, most notably the guaranteed income from having a large ratable asset base. Recent reforms have reduced this bias, but without an effective incentive for networks, demand management is very unlikely to fulfil its potential to cut costs.

QFF understands that the Institute for Sustainable Futures is undertaking a detailed study of the regulatory bias against demand management to determine if the desired move to demand management tools is feasible. We look forward to reviewing this work when available and for action to be undertaken to address any identified barriers to (demand management) adoption.

Yours sincerely

Travis Tobin
Chief Executive Officer

[12] Mr Darren Busine, Acting Chief Executive Officer, Energex Limited, Select Committee on Electricity Prices. Proof Committee Hansard, 3 October 2012, p. 27