Submission to House of Representatives inquiry Modernising Australia's electricity grid

Supporting industry and jobs through accessible and affordable energy

April 2017

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Executive Summary

It is unacceptable that in an energy rich country like Australia, weak energy policy is compromising Australia's capacity to be a competitive global food producer and to put fresh food on the tables of Australian households.

The Agriculture Industries Energy Taskforce[1] (the Taskforce) seeks through this inquiry, to highlight the impacts of Australia's high electricity prices on our highly efficient agricultural sector. At a time when Australian producers have an opportunity to meet the demand of an ever-increasing global need for clean, green food and fibre, they instead face the risk of industry viability against the reality of high electricity costs. High energy costs are imposing unsustainable cost pressures on the agricultural sector and driving down Australia's competitive edge.

Reform of Australia's water resources sector in recent years has resulted in greater competition for water resources. While water savings have been achieved on-farm through investment in infrastructure, the resulting higher use of energy has coincided with a dramatic increase in the cost of electricity. Analyses show that irrigators and growers' electricity bills have increased in excess of 100% in most cases, and up to 300% for some over the period 2009-2014, mainly due to the rising cost of network charges imposed by the network companies.

Typically, government regulated network charges and other costs represent around 50% to 56% of farmers' electricity bills; the actual electricity charges account for around 26%, although this is also changing rapidly. Network charges imposed by the electricity networks continue to have a highly distorting effect on the electricity market. Australian consumers are paying around twice as much for network charges as those in the United Kingdom and around 2.5 times as much as those in the United States.

The Taskforce seeks a comprehensive assessment of the economy-wide costs and benefits of revising the electricity network and transmission businesses' regulated asset base (RABs) to efficient levels. The RABs of Australia's electricity networks have been artificially inflated and inefficiently grown to excessive levels. Over the past fifteen years, the networks' RABs have increased by around 400%. These growth rates now put Australian electricity networks' RAB levels significantly higher than their international counterparts; we know that the RAB per connection levels of Australia's distribution networks are now up to nine times the levels of networks in the United Kingdom.

The Taskforce has advocated for a rule change via the Australian Energy Market Commission (AEMC) to change the way electricity networks' regulated asset base (RAB) is calculated as part of their network cost and embedded in their submissions to the Australian Energy Regulator (AER) during the five yearly pricing determinations process. The regulatory framework for gas pipelines requires the assets to be optimised and the value of unused and redundant assets to be written down. The asset revaluation was removed from the electricity pricing rules, not surprisingly just prior to the electricity RAB valuations took off. Why is the regulatory pricing framework that applies to gas and electricity networks not consistent? If it were, electricity networks would be entitled only to a return on their useful and used assets, a small step towards real cost reflective pricing.

Australia's agricultural industries play a significant role as economic drivers in local economies and provide flow on benefits to the national economy. Industries include cotton, rice, sugar, wine, almond,

[1] *Agriculture Industries Energy Taskforce: National Irrigators' Council, NSW Irrigators' Council, NSW Farmers Assn, Cotton Australia, National Farmers' Federation, Bundaberg Regional Irrigators Group, CANEGROWERS, Winemakers' Federation of Australia, Queensland Farmers Federation, Central Irrigation Trust (SA).*

horticultural and dairy, all major producers of agricultural product much of which is exported. Across these commodities, energy is used in a variety of ways such as pumping irrigation water, pasteurisation, cool rooms, processing plants and moving products.

The Taskforce has long advocated for reform of Australia's National Electricity Market (NEM). It is critical that this task forms part of the process to modernise Australia's electricity grid. This is against the backdrop of the significant momentum now occurring across the energy market, with the closure of coal fired power and the uptake of renewable energy technology as part of the transition to a lower carbon economy. It is also critical that security, reliability and affordability are embedded in the NEM during this transition and in the progress towards grid modernisation.

The closure of coal fired power is causing significant disruption, with gas increasingly on the agenda in the transition to a lower carbon economy. We recognise that gas may indeed act as a transitional fuel as we shift away from coal fired baseload power generation. However, this needs to be backed by robust legislation that ensures protection for land and water resources, fair and balanced land access negotiation arrangements, and robust science to inform decision making gas developments within the States. Improved planning and coordination between the Commonwealth and the states is critical to ensure energy affordability and reliability as the generation mix continues to change into the future.

Agriculture users of electricity are forced to operate in a market environment which lacks genuine competition and appears dominated by maximising returns to generators and infrastructure owners. The absence of competition results in gaming on the spot market which is struggling to cope with the transition to renewables. It is unacceptable that consumers are forced onto the spot market due to an inability to secure quotes from retailers for fixed term contracts. The timely announcement of the Australian Competition and Consumer Commission (ACCC) review of retail electricity prices is welcomed.

The NEM's major objective must be to provide affordable and reliable power in the best interest of consumers. Under current market governance arrangements, existing loopholes are enabling price gouging by network businesses and preventing a fair and effective pricing structure for consumers. It is hoped that the outcomes of this inquiry will feed into the other reviews and inquiries currently underway, including the Finkel Review [2], and that NEM governance arrangements will be addressed as part of this task.

The Committee will no doubt come to appreciate the level of frustration and cynicism felt by consumers, due to the complexity and bureaucracy of the electricity industry. The myriad of regulation has become increasingly divorced from reality and unaccountable, built on abstract theoretical ideas that are beyond the reality of the industry and its consumers. Endeavours by Taskforce members to engage various responsible bodies regarding these challenges have demonstrated the entrenched culture of institutional and blame shifting with governance and regulation of the industry split between many bodies, where prescriptive rules and processes prevent any positive change.

Claims by the institutions, by governments and the industry that they work in the long-term interests of consumers, is not visible in practice. In fact, the evidence of industry profit and soaring prices supports our own observations that shareholders are benefiting at the expense of electricity consumers. It would appear that the owners of the electricity generation, distribution and transmission assets have a dominant voice in driving the policies adopted by the regulatory bodies.

[2] *Independent Review into the Future Security of the National Electricity Market.*

The Taskforce supports a review of the anomalies within **network tariffs**; tariffs should be designed to ensure that irrigators and other businesses in non-congested parts of the network are not forced to meet the costs of network investments made to overcome congestion in other parts of the network.

In November 2014, the AEMC made a new rule to require network businesses to set prices that reflect the efficient cost of providing network services to individual consumers. This will allow consumers to make more informed decisions about their use of electricity. It is a concern however, that networks will use 'tariff reform' as an opportunity to undermine the prospects for energy efficiency and distributed generation, both of which represent competitive threats to their business.

The drive to renewables is progressing in the absence of a Commonwealth-state national plan or governance framework and is compromising reliability and security. At the same time, there has been a failure to build sufficient synchronous generation and storage into the system, where there is currently no viable storage capacity that would provide a renewable mix. The agriculture sector would embrace renewable technology providing the right mix of solutions was available at an affordable cost. This may be in the form of network supplied, as well as the installation of generating and/or storage capacity by individual companies and producers. The Finkel Review preliminary report notes that the '*shift from coal-fired generators to wind and solar PV generators has implications for security and reliability'*.

The current Government related reviews and inquiries regarding Australia's energy challenges must deliver an outcome and a clear transition process that will provide stability and coordination during the modernisation of the electricity grid in Australia and the move to renewables, including to stand-alone systems and micro grids. This will mitigate the trajectory which is leaving irrigated agriculture stranded, when renewable technologies most suitable to the sector, are not yet available nor reliable enough to support peak demand.

A focus on grid transformation and the application of new technologies could open the way for the development of smarter grid solutions. The Electricity Network Transformation Roadmap key concepts report released in December 2016 identifies that *'the next decade to 2027 is likely to see a step change in the rapid adoption of new energy technologies, driven by falling costs and global carbon abatement measures'.* The report notes that by 2027 customers will have choice and control of their use of onsite resources including solar and batteries, and that customers will have *'choice, lower costs, high security and reliability and a clean electricity system to 2050'.*

The irrigated agriculture sector does not currently have that choice and needs access to appropriate technology now, including smarter grid solutions.

Response to Terms of Reference

1. *The means by which a modern electricity transmission and distribution network can be expected to ensure a secure and sustainable supply of electricity at the lowest possible cost*

How are the objectives of security, reliability, sustainability and affordability interrelated?
What should be the highest priority objectives of a modern grid in Australia?
What are appropriate standards for the security and reliability of the electricity system?

<u>Weighted Average Cost of Capital</u>

The Regulated Asset Base (RAB) and the Weighted Average Cost of Capital (WACC) for distribution and transmission businesses in the NEM are the driver of unsustainable electricity costs for consumers, including irrigators.

The calculations of the WACC must change to drive decreases in costs and ensure a sustainable long-term grid that is affordable for all consumers.

The Agriculture Electricity Taskforce contends that the determination of the Weighted Average Cost of Capital (WACC) for the electricity distribution and transmission businesses – an issue that is largely but not completely within the AER's discretion - is based on what the Australian Energy Regulator considers to be an adequate rate of return of a 'benchmark efficient transmission or distribution service provider'. The calculation of the WACC, by its very design, is meant to be abstracted by the actual cost of capital of a regulated monopoly businesses.

As the Agriculture Electricity Taskforce argued in our joint submission to the Senate inquiry into electricity network companies, the distribution network businesses have promoted their interests on the WACC calculations by arguing that:

a) their debt is of 'high risk' (i.e. a BBB rating). In addition, the have claimed that the credit rating of their debt determines their borrowing costs. There is evidence however that the actual yields on network bonds and the price paid for bank debt shows that network businesses' actual borrowing costs are much lower than imposed by their credit rating. This is due to the fact that lenders recognise that networks are monopoly businesses and hence are willing to lend money at much higher rates than implied by their credit ratings. The evidence provided by Energy Users Rule Change Committee to the Australian Energy Market Commission in 2011 shows that actual network borrowing costs, even during the peak of the financial crisis were lower than suggested by the networks' credit ratings.

b) their imputation credits should be calculated on favourable imputation credits. As highlighted in the Taskforce's submission to the Senate Inquiry (above), an example from the Queensland distributors, Energex and Ergon shows that the full income tax of these government-owned distributors is paid directly to the Queensland Government. The imputation of their dividends is therefore completely irrelevant. It is still not clear to the Taskforce whether the taxation allowance for privately owned distributors properly represents their actual tax costs is not clear.

c) their debt and equity raising costs are higher than is actual the case. In particular, government owned network businesses incur nowhere near the costs of a comparative 'benchmark service provider. Government-owned network businesses do not incur equity raising costs – as they are government owned – and their debt is arranged by the respective state treasuries, at a rate lower than the network businesses seek to recover from their customers. This outcome arises from the incorrect assumption by the regulator that these businesses are 'privately' owned.

We note that the Australian Energy Regulator supports the 'benchmark efficient' approach to calculating the distribution and transmission businesses weighted average cost of capital and has accepted many of the network businesses' claim despite compelling evidence that they are not supported by the evidence of actual costs.

Recommendation:
The calculation of the weighted average cost of capital for the transmission and distribution businesses must be based on evidence of the real borrowing costs and operating conditions of these businesses and not on a 'benchmark' comparative business.

Transmission and Distribution businesses must be required to disclose their actual borrowing costs.

Better Access to information

Overall, the current regulatory structure for electricity pricing is highly complex, multi-layered and not transparent for customers and stakeholder representative bodies. Complexity in particular arises due to the various bodies that are responsible for assessing and determining different components of electricity charges and tariffs. Such a multi-layered regulatory approach causes information to be widely dispersed and not easily accessible for consumers who aim to gain a better understanding of how prices are derived and the reasons behind the recent price increases.

In order to make informed decision, food and fibre producers need to have access to comprehensive and easily accessible (and usable) data and information on their current electricity use and demand profile (past and current). A detailed description of the retail and network tariffs that they are subject to must also be provided. Furthermore, food and fibre producers must be informed about the options to transfer to any other tariffs that may be more cost effective or more suitable for their business operation.

Furthermore, the Taskforce believes that information should be provided around the transition towards smart meters, including who is responsible for their installation and the costs to be absorbed by consumers associated with the transition.

Recommendation:
Customers need to have access to comprehensive and easily accessible (and usable) data and information on the current electricity use and demand profile as well as their tariff structure and meters.

2. The current technological, economic, community, and regulatory impediments and opportunities to achieving a modern electricity transmission and distribution network across all of Australia, and how these might be addressed and explored

What are the costs associated with an 'outdated' grid?

Regulated Asset Base

There have been countless studies into the drivers of recent electricity cost increases and most of these studies have concluded that the Regulated Asset Base (RAB) and the Weighted Average Cost of Capital (WACC) have been a driving forces behind these increases.

Given the current value of the electricity distribution and transmission businesses' RAB, electricity costs will remain high *unless* there is a fundamental shift in the way the RAB is set and calculated into the future (i.e. reduced to more sustainable levels).

There have been many contributing factors that led to the inflated RAB values for the distribution and network businesses in the NEM, including the state-based reliability standards, growth in demand in certain areas, but none of these drivers have been as important as the regulatory framework governing the setting of the original RAB value and determining the ongoing valuation of the RAB in each regulatory determination.

Under the current regulatory framework, the Australian Energy Regulator (AER) has limited control to adjust the network businesses' RAB, as the valuation methodology has been set within the National Electricity Rules (NER). The inability of the Federal regulatory to determine prices based on efficient RAB has been demonstrated by the outcomes of the AER's revenue determinations in recent years, which have led to networks' prices to remain unsustainably high for consumers, including irrigators.

In terms of the methodology for determining the RAB, there are several deficiencies, including:

a) The initial regulatory valuations of the distribution and transmission businesses were determined when the networks were established in the mid to late 1990s. There were a number of valuation methodologies that could have been adopted however the regulator chose to apply the 'Depreciated Optimised Replacement Cost' valuation methodology – a methodology that resulted in the highest possible RAB valuation for the networks.

b) The opening RAB methodology required the regulator to subsequently optimise the ongoing RAB value to reflect the efficient value of assets needed to provide the required services. This meant that if the networks invested in more network capacity than required, the regulator were supposed to exclude the value of the excess capacity from the regulatory asset base until such as the additional network capacity was required. However, in practice, this capacity assessment has rarely been applied. As a result, consumers were faced with:

- Having the initial regulatory valuations set at the highest possible levels using the DORC valuation methodology, based on the expectation that the ongoing RAB valuations would be subjected to optimisation; and
- the regulators not actually applying the required optimisation to the ongoing RAB valuations.

In 2006 the Australian Energy Market Commission made amendments to the National Electricity Rules which effectively removed the optimisation requirement, together with changes that ensured that all future CAPEX was automatically rolled into the RAB without any prudency or efficiency review.

The removal of the optimisation and ex-post review provisions in 2006 was a major driver of over-investment.

c) The incentives for over-investment were particularly strong for the government-owned networks due to their lower borrowing costs and the additional benefits that they realise from over-investment.

Overall, the Taskforce contents that the network assets are substantially over-valued, not least in light of declining asset utilisation due to lower than expected demand.

Recommendations:
The Taskforce seeks a comprehensive assessment of the economy-wide costs and benefits of revising the electricity network and transmission businesses' regulated asset base (RABs) to efficient levels.

In addition, the Taskforce seeks a rule change via the AEMC to change the way electricity networks' regulated asset base (RAB) is calculated during the five yearly pricing determinations process. The regulatory framework for gas pipelines requires the assets to be optimised and the value of unused and redundant assets to be written down. The same should apply to the electricity networks (i.e. used and useful approach)

Finally, construct adequate incentive mechanism that ensure network businesses consider all options - supply and demand side – to address any impediments to future grid constraints.

What might be the role of new technologies in improving system security, reliability, sustainability and affordability? What is the potential for new technologies to alter the inter-relationships between these objectives?

How can the grid better accommodate the rapid pace of technological change, including an increasing level of variable electricity generation?

What possibilities are there for alternative pricing models (for example, cost-reflective pricing) to better reflect the true cost of services provided by a modern grid?

Tariff Structure

The Agriculture Electricity Taskforce supports a review of network tariffs.

Network tariffs should be designed to ensure that irrigators and other businesses in non-congested parts of the network are not forced to meet the costs of network investments made to overcome congestion in other parts of the network.

The current level of prices and the structure of network tariffs incentivises food and fibre producers in the NEM to consider alternative energy sources – effectively moving away from the electricity grid - or forcing them to shut down their high energy intensive irrigation equipment.

The incentive to move to alternative energy sources has intensified since a 2014 rule change made by the AEMC which mandated the move to 'cost reflective tariffs'.

The 2014 AEMC rule change on distribution network pricing has caused a transition to 'cost reflective' tariffs –demand driven tariffs or Time of Use Tariffs - which has had (and will continue to have) a significant impact on irrigators' and growers' electricity costs. While demand based tariffs are a sensible approach when congestion and constraints exist in the system, it is an absurd strategy to deploy when:

a) There is spare capacity in the National Electricity Market
b) Food and Fibre producers have limited information about their energy use and the tariff structure applicable to them.

It is very difficult to make appropriate assessments regarding what constitute an appropriate tariff (and pricing) structure when so little is known about individual consumption patterns or investments behind the meter. As highlighted by the recent review into the Security of the National Electricity Market (Finkel Review):

> *'The growing number of distributed energy resources could also impact on power system security. They are not centrally controlled or visible to AEMO and there is currently no formal national framework for collecting information on them (such as their location, date of installation, controller settings, brand, model and real time energy statistics). This means that power system models and forecasts are less accurate than in the past, particularly when the output from distributed energy resources is high and fluctuating'.*

Given the inaccuracy of AEMO energy forecasting historically, it is concerning that these forecasts will become progressively more unreliable.

However, irrespective of the increased challenging to forecasting demand, the regulatory framework governing network charges is having real impact on food and fibre producers now:
In the case of Queensland, QFF has modelled the impacts of moving towards cost reflective tariffs[3] on irrigators in the St George district. Based on our analysis, implementation of demand tariffs on irrigators in St George will increase electricity bills between 200% and 300%.

[3] As per the Australian Energy Market Commission rule change in 2014 on the distribution network pricing arrangements.

In one example, an irrigator who currently is on Tariff 62 (with an associated bill of $150,000 per year) would be forced to pay $450,000 under the new tariff arrangements despite no alternation in his electricity use. Such an exponential increase in input costs cannot be absorbed by cotton producer or any agricultural business in a similar circumstance.

In the case of NSW, 185 primary producers will be forced to switch to 'Time of Use' or 'Demand Driven Tariffs' which will result in cost increases of up to 100 per cent with no corresponding change in electricity use. The resulting cost pressure is significant and illustrates the vulnerability of irrigators to the current regulatory framework governing electricity producers where the AEMC rules require a shift to cost reflective tariffs.

The cost associated with these 'cost reflective tariffs' (i.e. in most instances demand driven tariffs for irrigators and growers in NSW) have a severe negative impact on irrigators' profitability and is leading to perverse operational outcomes. The tariffs and associated costs are pushing food and fibre producers to alternative energy sources – moving them away from the electricity grid – or forcing them to shut down their electricity intensive irrigation equipment.

Incentives should be provided to growers to remain on the grid and utilise the existing grid most optimally. The Taskforce believes that without acknowledgement of the requirements of consumers, irrigators may abandon the grid which will have significant implications under 'end of line' scenarios. In these situations, rural communities may often be reliant on large industrial users paying for electricity in order to maintain their electricity infrastructure and generation capacity.

While the Taskforce supports investigation of alternative solutions for 'end of line' scenarios, we believe that a complete abandonment of the grid is not in the interest of broad rural and regional consumers.

We believe that driving prices – through network tariffs - towards a scenario where electricity from the grid becomes unviable, is in no-one's interest. There continues to be no modelling or understanding of the broad impacts that will occur through these high prices forcing large customers to seek off grid solutions.

Recommendation:
Future tariff structure should consider to be structured around:

- **A supply charge that is connection-specific and does not vary with consumption. The value of the supply charge should be high enough to recover individual specific customer costs – such as meter reading and supply charges that are not shared with other consumers and which do not vary with consumption or demand.**

- **Consumption charges per kWh consumed. These charges should be set to cover costs that are variable in the short term and also make a contribution to the recovery of sunk costs. The design of consumption charges should also reflect the following:**

    - **It may be sensible to have consumption charges that vary by time of day (i.e. peak vs shoulder vs off-peak and where applicable should reflect seasonal variations.**
    - **The difference between peak, off-peak and shoulder should reflect the existence of temporary defined capacity constraints and consumers temporally varying elasticity of demand.**

- **If there are to be significant differences between peak and off-peak rates then it is important that the peak rates apply for limited intervals so that irrigators can respond to those prices by reducing their consumption.**

What opportunities are there to improve governance and regulation in the grid?

Governance Arrangements for the Australian Energy Market

Despite the attempts by various review processes to disentangle the regulatory structure of the Australian Energy Markets, the Taskforce continues to hold the view that the current governance structure is highly complex and provides little opportunity for individual consumers or stakeholder representative bodies to engage effectively with the three entities that are the focus of this review: Australian Energy Regulator, Australian Energy Market Commission and the Australian Energy Market Operator.

Furthermore, the tiered overview of the various governance bodies, regulators and COAG committees does not provide a clear picture on the roles and responsibilities of these responsible entities. The Taskforce understands that the task of untangling the web of electricity governing bodies is complex, however without a full understanding of the roles and responsibilities of each of these entities, it is difficult to assess who consumers should approach if they feel the system is not working. There is a lack of transparency and clear delineation of responsibilities which makes it virtually impossible for food and fibre producers to fully engage.

Proposed Improvements

The Taskforce is dissatisfied with the existing regulatory arrangements. We believe fundamental reform is needed, not the sort of minor 'fine-tuning' that has characterised so much of the regulatory debate to date, despite the clear evidence of very major failures.

The Taskforce proposes the Inquiry consider the following reforms:

1. The Competition Principles Agreement should not apply to state government monopoly electricity networks. The application of this agreement to electricity networks is obviously contrary to the legitimate commercial and economic purpose of this agreement for government owned businesses that provide services in competitive markets. No longer subsuming the network monopolies under this agreement will mean that the economic regulation of the government owned monopolies will recognise the state government's ownership, and regulatory allowances for the cost of capital will be established accordingly. This will bring the regulation of government owned networks back into line with the long-established practice in Australia (which prevailed until the Competition Principles Agreement) and will mean that the economic control of government owned network monopolies in Australia will be consistent with the approaches adopted in the economic regulation of government owned networks in other countries including the United States, Germany, Austria and the Scandinavian countries.

2. Government owned network monopolies should be economically regulated by the state governments that own them. This is the long-established tradition in Australia until the reforms that led to economic regulation initially by state government regulators and subsequently by the AER. The outcomes delivered by these ostensibly independent regulators have, as we have shown, been highly unsatisfactory. Political accountability for the prices charged by state government distributors must rest with the governments that receive their profits and taxes.

3. The excessive asset valuation must be addressed through write-down of the networks' assets. This is a complex issue and the appropriate mechanism to achieve this will need to be studied carefully.

4. We do not believe that the AEMC should have any role in the economic regulation of networks. The bifurcation of economic regulation between the AER and AEMC is a unique model internationally.

5. The form of regulation (specifically periodic price/revenue controls as opposed to other forms of regulatory control) should be reviewed. Such a review would be undertaken anyway if our second recommendation is pursued. This (fifth) recommendation therefore relates primarily to the economic regulation of privately owned distributors by the AER.

We recognise that our recommendation on regulatory design (and even more so institutional responsibilities) is a big change from the 'reforms' that led to the current arrangements around fifteen years ago. However, we believe that the evidence justifies such fundamental changes.

Finally, in the context of possible privatisations in NSW and Qld, the question arises how partially privatised distributors should be regulated. This is a complex issue, but our view is that if 'privatisation' takes the form of minority private shareholder participation, and governments continue to retain majority ownership and control, then the network should be regulated by the government, not by the AER.

What opportunities are there for consumers to benefit from the modernisation of the grid? How can we ensure that these benefits are able to be shared equitably by all consumers?

What sort of community attitudes or concerns will need to be addressed in order to successfully modernise the electricity grid?

3. International experiences and examples of electricity gird modernisaiton in comparable jurisdictions

What are the key similarities and differences between the electricity system in Australia and those of other countries?

How does Australia compare with other countries in the rate of adoption of variable electricity generation and other new technologies?

How does Australia compare with other countries in progress towards electricity grid modernisation? What are the examples of best-practice governance and regulation in other countries?

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