



27 February 2017

Dr. Alan Finkel AO
Chief Scientist
Chair of the Expert Panel
Independent Review into the Future Security of the National Electricity Markets

via electronic mail: NEMSecurityReview@environment.gov.au

Dear Dr Finkel,

RE: NSW Irrigators' Council and Cotton Australia joint submission on the Preliminary Report for the Independent Review into the Future Security of the National Electricity Markets

The NSW Irrigators' Council (NSWIC) and Cotton Australia, on behalf of irrigators and growers in NSW, appreciate the opportunity to comment on the Preliminary Report for the *Independent Review into the Future Security of the National Electricity Markets*. Our respective organisations welcome the review which we hope will address the pressing issues around future electricity supply in the National Electricity Market and the associated costs.

Executive Summary

In broad, our organisations would like to provide the following key recommendations to the review:

- The review needs to focus on addressing the cost impacts on consumers, including irrigators, and how current electricity prices drive consumers' decision making processes.
- The review needs to consider how to drive change from within the NEM governance framework. The review has highlighted the lack of timeliness and responsiveness but has not pointed towards solutions that could improve the current governance structure. We encourage the Review Panel to be receptive to changes that drive improvements, innovation and address existing conflicts of interests. In particular, we encourage the Review Panel to consider the final recommendations from the previous governance review of the National Electricity Market which was completed in October 2015.
- The review needs to consider the inflated Regulated Asset Bases of the current distribution network service providers and the associated costs to consumers.
- The review needs to raise the issue of grid transformation and how new technologies might provide an opportunity for introducing smarter grid solutions.
- The review needs to strike a balance between 'grid security' and 'grid affordability'. Ensuring affordability in electricity prices will be critical for consumers who are otherwise considering going off grid.
- The review needs to highlight the importance of planning to drive a sustainable NEM. Engineering solutions may not be the best solution to solve the issue around supply security.

Background information

Electricity has become a major input factor in irrigated agriculture due to increased competitive pressure for water resources and a highly variable climate which has led to significant structural adjustments in the irrigation sector over recent years. Many irrigators and growers have converted existing on-farm irrigation equipment to reduce their water use dependency. While initial studies indicate that the water savings achieved through on-farm infrastructure investments have surpassed prior expectations, side effects have materialised in terms of higher energy usage.

These upgrades - which have been supported by the Federal Government via the Water Act 2007 (Cth) and the Murray-Darling Basin Plan 2012 – have not only led to greater electrification in irrigated agriculture but also coincided with a sharp increase in electricity costs. A small sample assessment of electricity bills from irrigators and growers in 2014 indicated that electricity prices in the NSW irrigation sector have increased by up to 300 per cent over the period (2009–2014), mainly due to rising network charges. This is supported by industry wide research, where benchmarking costs for the cotton industry indicates that energy was the second highest cost of production, with electricity representing the most substantial increase in costs – outstripping the consumer price index many times.

Internal investigation of irrigators electricity bills indicate that network charges make up between 50 to 65 per cent of irrigators' electricity bills. The continuous increase in the cost of network services and the underlying regulatory framework governing network tariffs (i.e. demand driven tariffs) are the main reasons irrigators are considering to 'switching off' efficient irrigation technologies in an effort to reduce rising electricity costs or 'going off grid' as a means to lock in energy prices going forward. We are aware of growers and irrigation districts who are connected to the grid who have undertaken energy efficiency investigation, explored spot price contracts, solar installation as well as diesel generation, however continue to have multi-million dollar yearly electricity costs.

As an example, we have modelled the impacts of moving towards cost reflective tariffs¹ 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%. 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 broad, the rising electricity costs cannot be offset by growers and irrigators because they are price takers in international commodity markets and have therefore no ability to dictate returns achieved for their food and fibre products. Despite their vital importance to rural and regional communities, the irrigation sector continues to be a 'cornered demographic' in the context of electricity – constrained in its access to, reliability of, and by the cost for electricity through its rural location.

The vulnerability of irrigators and growers arise from two main sources:

1. Industry Demand (Internal)

- **The water-energy nexus:** Irrigators and growers have been subjected to wide-scale Federal water reform since 2007, which has caused significant structural adjustments in the irrigation sector. To adjust to these water reforms and ensure the ongoing financial viability of the sector, irrigators have made significant capital investments, including the adoption of water saving infrastructure on farm which is often highly electricity intensive. The associated higher electricity costs have become a major

¹ As per the Australian Energy Market Commission rule change in 2014 on the distribution network pricing arrangements.

constraining factor for irrigators in their utilisation of water efficient irrigation equipment. This has exposed individual irrigators to electricity price volatility and continuous price rises.

- **Operational constraints:** Irrigators and growers do not rely on a constant demand for electricity across the course of a day. This irregular demand for electricity arises from variation in weather and different crop water requirements. In addition, irrigators often do not have a choice when to use electricity, as it depends on statutory water management requirements and regulations around water availability and access. For example, river pumpers may only be licenced to draw water for a short time period in a month, meaning that irrigators will have to work their pumps non-stop to ensure that their water allocation is captured in on-farm storages. As such, irrigators and growers often have an inelastic demand for electricity and cannot respond to different price signals.

2. Regulatory Framework (External)

- a) **Costs and tariffs:** The cost increases for electricity as well as the current NSW network tariffs have severely impacted irrigators' profitability and caused perverse operational outcomes. Current electricity prices and the structure of tariffs is incentivising irrigators to look for alternative energy sources – effectively moving away from the electricity grid - or forcing them to shut down their high energy intensive irrigation equipment. These issues are being magnified by a 2014 rule change made by the Australian Energy Market Commission which dictated the move to 'cost reflective tariffs'. As a result of the rule change 185 primary producers in NSW will on 1 July 2017 be moved onto 'Time of Use' or 'Demand Driven Tariffs', resulting in cost increases of up to 100 per cent with no corresponding change in electricity consumption. Given the existing cost pressures, the additional cost is significant and illustrates the vulnerability of the irrigation sector to the current regulatory framework governing electricity.

At this point, and despite a regulatory system which aims to regulate against monopolistic behaviour, NSW irrigators and growers see little evidence that the rules are delivering a long term, sustainable outcomes for rural consumers. In addition, we do not see how the current system '*promotes an efficient investment in, and efficient operation and use of, electricity services for the long-term interest of consumers of electricity with respect to – price, quality, safety, reliability and security of supply of electricity; and the reliability, safety and security of the national electricity system*', as specified as the key objective in the National Electricity Law.

Furthermore, it must be noted that the AEMC 2014 rule change on 'cost reflective tariffs' is only the latest in a long list of electricity cost pressures that irrigators and rural communities have had to endure. As irrigators and growers in NSW are nearly exclusively located in Essential Energy's service area, they had to accept considerable capital upgrades over the previous DNSP revenue determination (2009 – 2014) which resulted in significant cost increases for irrigators. These upgrades were based on demand consumption forecasts from the Australian Energy Market Operator (AEMO) which failed to materialise. The result has been an underutilised and expansive regulatory asset base for Essential Energy which will require ongoing servicing and maintenance. As the current regulatory framework does not allow the Australian Energy Regulator (AER) to review or potentially write down inefficient or underutilised infrastructure assets, irrigators and rural consumers will be required to pay for an oversized distribution network unless other opportunities are explored (i.e. non-capital demand management options, distributed energy systems, new technologies and stand-alone energy supply systems). In this context, Cotton Australia and NSWIC urge the Expert Panel to address the issue of spare capacity in the National Electricity Market.

As the National Electricity Market is changing, it must be ensured that the integration of new technologies (including intermittent renewable energy) are coordinated and well managed to avoid inefficiencies and other unnecessary costs. Cotton Australia and NSWIC believe that irrigators and growers, together with the regional

communities, have an important role to play in bringing about this change. As outlined previously, regional communities are already constrained in their access to, reliability of and cost for electricity. Our respective organisations believe that the irrigation sector could play a role in active demand management, embedded and distributed generation, as well as facilitating greater operational efficiencies in the network

Having said this, under the current framework and technological advances, growers and irrigators have limited ability to offset their energy use. Despite this, they are actively looking for mechanisms that can offset their energy costs, making the timing 'right' for investigation of alternative energy sources. We believe that this creates a perfect scenario for investigation of mutually beneficial outcomes for both networks, irrigators and the broad range of electricity consumers. We believe that targeted research will ensure the networks do not lose irrigators as grid customers, peak demand loads can be reduced and there is potential for individuals to feed energy back into the grid to offset their requirements for future network augmentation.

For the benefit of the Finkel Review panel we have outlined our organisations' specific responses to the relevant subsections of preliminary reports' consultation questions. These are outlined on a chapter by chapter basis.

Should you have any further questions or would like to seek further clarification on any of the issues raised in our joint submission, please contact Stefanie Schulte (NSWIC) – stefanie@nswic.org.au or Felicity Muller (Cotton Australia) felicitym@cotton.org.au.



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Response to consultation questions

Chapter 1 – Technology is Transforming the Electricity Sector

1.1. How do we anticipate the impacts, influences and limitations of new technologies on system operations, and address these ahead of time?

In response to increasing cost pressures from electricity use, irrigators and growers are already actively looking for alternative energy supply opportunities and new technologies that can assist them in reducing their costs. A number of these systems are already in place and given the predicted price increases over the next three years - as outlined within the Finkel Review - it can be assumed that a continuing migration towards alternative technologies will occur (see attached Grid Connected Solar publication produced by Cotton Info).

There has been little response from those organisations overseeing the NEM – the Australian Energy Market Commission (AEMC), Australian Energy Market Operator (AEMO) or the Australian Energy Regulator (AER) – or from the network companies that are undoubtedly being significantly impacted by such a migration off the grid regarding the issues generated through the loss of customers. While we are reluctant to lock our membership into a network that has substantial redundant costs, we believe that a pricing system that encourages consumers to move completely away from the grid is not in the interest of all consumers.

Given that there has been exceptionally high penetration of solar PV panels and an accelerated move towards energy storage systems, Cotton Australia and NSW Irrigators' Council strongly support major reforms that bring about significant cost consolidation in the current network to maintain its relevance. We believe that without

these ‘upfront’ reforms and substantial changes to pricing structure there will be considerable changes (a reduction) in the number of consumers paying for electricity infrastructure.

Cotton Australia and NSW Irrigators’ Council believe that the COAG Energy Council, together with the NEM states must have strategic approach that:

- a) assesses which “electricity use model” is most optimal for different geographical areas of the National Electricity Market (i.e. which users and geographical areas are critical for the efficient operation of the NEM and which users and geographical areas would benefit from going ‘off-grid’ or establishment of ‘stand-alone’ energy systems)
- b) provides the right incentives for people to ‘self-select’ into these optimal electricity use models.

To date, there has been little work done to understand the impact of consumers, particularly larger consumers in rural and regional communities from exiting the grid. Often these areas will be regions that experience a disproportionately higher impact from change due to their low population density. Before there is a significant exit of consumers off the grid in these fringe regions, it will be important to have an understanding of the impacts caused by the introduction of new energy generation technology and a changing consumer base.

Due to price pressures, our industries have been actively monitoring energy technologies. We have become aware that there are no current Australian Standards for battery technology, an issue which represents a significant challenge for our growers and irrigators. Batteries may represent a bushfire risk, due to their potential to overheat as a consequence of exposure to high temperatures. This is a particular issue where high temperatures are common across inland agricultural regions and where distances are significant, giving fire the potential to spread rapidly.

1.2. How can innovation in electricity generation, distribution and consumption improve services and reduce costs?

Innovation in electricity generation and distribution will be key for the irrigation sector to have access to affordable energy to produce local food and fibre. New advances in renewable energy generation for pumping equipment as well as battery technology could provide growers and irrigators with more control over their energy use, reduce their peak demand and hence reduce their costs. In addition, new technologies provide flexibility to growers who otherwise have no choice but to access expensive grid energy – often at peak times.

Continuing advances in ‘off-grid’ solutions provide irrigators and growers an alternative to the expensive ‘demand tariffs’ – tariffs that do not align with the needs and requirements of the irrigation industry.

Battery technology is inadvertently changing the monopoly of electricity distribution networks (as long as it is not exclusively captured by the network businesses), as consumers will no longer be passive price takers, but are able to take an active role in electricity management. This will likely require the network companies to offer more competitive prices in an effort to maintain their customer base. To be able to offer these pricing solutions there will be a need for the networks to undertake significant evaluation of their businesses to see how they can deliver on cost reductions – it is anticipated that this will drive significant changes to business structures including distribution networks. We believe that it should not just be consumers and network businesses considering the impacts of these changes, but that Government should take leadership on energy policy. Distributed generation – through PV generation – should be seen as an opportunity to generate energy and drive down future capital costs or a means to avoid additional capacity being installed for the purpose of meeting peak demand. Exactly how the incorporation into the grid will occur is unclear and will require further investigation. We encourage the Review Panel to consider these and other options.

Cotton Australia and NSW Irrigators' Council has long advocated for the networks to drive significant changes in their business. This includes changes to energy generation and distribution in recognition of the significant costs that are imposed on businesses to operate a network that has not undergone any major transformations but has largely been operating under a 'business as usual' approach. Current thinking in the energy sector appears to only focus on vertically integrated energy market. However, we believe that there needs to be substantial consideration of the NEM (in light of dispersed generation and distribution and micro-grids), and include a consideration of network asset that may need to be written off where these are redundant or highly underutilised. We were encouraged to see that this had occurred to some extent within the recent Powerlink transmission network determination however despite future costs being written off, there is no evidence that the regulated asset base had been adjusted in accordance with the removal of assets from the network.

The regulated asset base plays a significant role in current prices paid for electricity in the NEM and a continuous increase in the asset base will lead to an unsustainable cost basis. NSW Irrigators' Council and Cotton Australia have been advocating for quite some time for there to be an evaluation of the regulated asset base and given the Finkel Review's consideration of cost impost, and the impact of technology on the network, we believe that an assessment of the network asset base warrants significant consideration. While we understand, there is some reticence to write off historical investment, we believe that without a detailed evaluation of the regulated asset bases, networks will not be price competitive, an outcome which we believe will result in significantly inferior outcomes for the networks than undertaking an assessment of the asset base.

During previous discussions with the AEMC regarding the impact of the RAB on costs for consumers it was stated that the regulatory investment test (RIT-T) was to act as the stop guard to prevent over-investment in the network and avoid any ongoing inflation in costs. NSWIC and Cotton Australia were highly concerned to see that flagged interconnectors were currently being considered for exemptions to the RIT-T. We believe that such exemptions will only serve to exacerbate the increases in CAPEX and inflated RAB outcomes which we have consistently advocated against.

Innovation has significant potential to improve services and reduce costs for customers however NSWIC and Cotton Australia believe that the current regulatory system does not have the flexibility to easily incorporate new technology or move away from the redundancies inherent in the current system. We believe that a significant proportion of this inflexibility is driven by Governance frameworks within the NEM. We have seen little evidence of proactive approaches or strategic thinking taken by the AEMC, AEMO and the AER. We also fail to see the necessary leadership being driven by the COAG Energy Council – points which we outlined under the previous review of governance arrangements of the National Electricity Market. We believe that leadership change across these Governance institutions may provide the necessary stimulus to change organisation culture, and drive change and innovation in the NEM. We have observed first-hand the difference a change in leadership and ethos can have in the water sector. We would encourage the Finkel Review to see how a change in leadership amongst the NEM organisations may drive the necessary stimulus to adopt and transition the NEM to new modes of generation.

Chapter 2 – Consumers are driving change

2.1. How do we ensure that consumers retain choice and control through the transition?

While irrigators and growers are already looking for alternative electricity supply opportunities and actively pursuing 'off-grid' solutions to expand their choices, it will be important that there is:

- a) Investment certainty (to ensure that irrigators and growers can plan their future decisions)
- b) Incentives to encourage optimal switching (i.e. please see our response to 1.1).
- c) Effectively regulate for monopolistic behaviour by the distribution network service providers (i.e. through limiting access to battery storage or imposing significant costs for connection fees).

NSWIC and Cotton Australia believe that consumers could have considerably more choice as a consequence of energy innovation. We are supportive of consumers retaining the ability to have a certain amount control over their associated costs.

We recognise that this may be seen as a threat to the current NEM structure and the network businesses, however, we encourage the networks to consider any localised generation as an opportunity for their business. We recognise that, across the NEM, there are set reliability standards that need to be adhered to. However, NSW Irrigators Council and Cotton Australia would support a reevaluation of the standards to consider how generation of intermittent energy can be successfully incorporated in the energy supply equation. For example, ensuring that appropriate performance standards for wind, solar and thermal generation are put in place to optimise the reliability of the intermittent energy generation.

We believe that such standards will not only be of benefit to the NEM as they will provide certainty for the electricity transmission and distribution companies, but will also provide a greater level of certainty for consumers given the current number of commercial participants in the market. Reliability and performance can be an issue associated with certain suppliers, and with new battery products causing safety concerns, our organisations would support the development of standards, to reduce the potential for entrance of low quality energy generation products. We recognise that these standards would need to avoid being excessively prescriptive in order to avoid any issues with adoption of new and improved technologies, however we believe the complete absence of standards is of concern.

2.3. How do we ensure the needs of large-scale industrial consumers are met?

In addition to our answer to question 1.1, NSWIC and Cotton Australia consider it important that growers and irrigators are provided with full information about their energy use profile in order to make informed decisions. At this stage, growers and irrigators do not necessarily have access to their energy use data, in particular their interval data, which would provide them with an overview of the cost drivers of their electricity use. This information vacuum must be urgently filled without penalising growers and irrigators in the initial 12- 24 months' period. Under the current proposal for NSW irrigators and growers, consumers were given a period of 12-months' notice about the transition to "Time of Use" or "Demand-based Charges" from 1 July 2017. However, due to a lack of metering information, consumers have had little guidance on the price impacts that will occur as a result of this tariff transition. We would support consumers having the opportunity to obtain at least 12 months worth of information from smart metering equipment to ensure that they can be fully informed of the implications of their electricity use patterns. At the present time, the inability to make these decisions may result in significant bill shock.

In addition, further research and development must be undertaken to assess the optimal energy supply strategy for regional large-scale electricity consumers. As outlined in background information section of this submission, we feel irrigators and growers are a cornered demographic as a result of their geographical location. They therefore pay a significant price premium for their electricity use, despite the fact that there is spare capacity in a large part of the network. This inefficiency, coupled with an ineffective regulatory framework that does not allow the AER to evaluate the network businesses' regulated asset base, causes higher than necessary for these consumers.

NSWIC and Cotton Australia submit that:

- a) The regulator must be given the authority to re-evaluate the network businesses' regulatory asset base in order to avoid costs for consumers of underutilised network assets.
- b) The Federal Government must consider a potential alternative electricity pricing and tariff mechanism for regional consumers that addresses the cost impacts.

- c) Growers must be given full information about their energy use, through access to smart metering technology that does not penalise irrigators and growers for its installation in the first 12-24 months of use.

Finally, it is important the Federal Government – through the COAG Energy Council – addresses the ‘energy trilemma’ of simultaneously providing a high level of security, universal access to affordable energy services and reduced emissions. However, in this context, NSW Irrigators’ Council and Cotton Australia submit that it is paramount that the Federal Government prioritise access to affordable energy for irrigators and consumers more broadly. We believe that without access to affordable electricity the ability to achieve network security and reduced emissions may be significantly compromised.

2.4 How can price structures be made more equitable when consumers are making different demands on the grid according to their electricity use and their investment behind the meter?

As we outlined in our background information, the 2014 AEMC rule change on distribution network pricing has caused a transition to ‘cost reflective’ tariffs which has had (and will continue to have) a significant impact on irrigators and growers in NSW. 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) Growers and irrigators 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 equitable pricing structure when so little is known about individual customers’ consumption patterns or investments behind the meter. As highlighted by the Finkel Review team:

‘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.

We believe that more needs to be done to incorporate and understand the use and contribution of distributed energy resources. NSWIC and Cotton Australia would support some sort of capture of distributed energy generation information. Given there are already approximately 1.5 million rooftop solar systems in place, and it is predicted that there will be 1.1 million battery storage systems in place in conjunction with PV panels, it is important to glean an understanding of the contribution of this energy source. We understand that this may mean the roll out of smart meter technology. We would encourage the Government to take leadership and consider the rollout of this metering technology. It is recognised that smart metering comes with data privacy and security concerns. This will require significant investment by network companies in appropriate software systems. We would encourage the development of data privacy standards for the capture and transmission of distributed energy resources.

While it is difficult to say what the impact of behind the meter investment will be - given there have been no studies on impacts to customers as a consequence of some customers exiting the grid - some indicative measures have become apparent in the recent tariff structure statement documents. NSW energy network distributors attempted to instigate declining block tariffs to encourage greater energy consumption as the installation of solar PV and energy efficiency measures had impacted on the networks ability to achieve their

allowable revenues. While this proposal was rejected by the AER, a need to consider where write off of network assets might be appropriate is paramount. We believe that high electricity prices, including high fixed costs for electricity, will only encourage consumers to pursue alternative energy generation solutions.

Chapter 3 – The Transition to a Low Emissions Economy is Underway

3.3. What are the barriers to investment in the electricity sector?

NSWIC and Cotton Australia's involvement in the electricity and energy sector is limited to our understanding of growers' behaviour and investment responses. The decision for growers to invest in alternative energy sources is primarily driven by the source of irrigation water, with groundwater and year-round pumpers more likely to invest in modes of alternative energy generation due to shorter payback periods achieved through these scenarios.

Tariffs, and the associated costs, incentivise growers and irrigators from stepping away from the grid rather than attempting to integrate it. There are simply no incentives for the distribution network service providers to shrink their network, enable new and innovative approaches to energy supply and distribution under the current regulatory revenue determination. In this context, it needs to be assessed whether it is appropriate to maintain a vertically integrated National Electricity Market and how we can address the current conflict of interest issues with the distribution network services providers that arise from their monopoly status and in some cases State ownership.

We are aware, through our discussions with network businesses regarding tariff challenges facing our irrigators, that one of the issues they face relates to investment uncertainty due to a lack of clarity and direction in Government policy. Another major challenge relates to a requirement for proven technology and how alternative energy sources are integrated in to the grid. Whilst we are not completely across the mechanics of such a scenario, it appears that there are significant difficulties incorporating alternative energy sources, for example, the incorporation of large scale solar farms. It is our understanding that under such a scenario, access to funding from ARENA to 'prove' the technology has been required.

3.4 What are the key elements of an emissions reduction policy to support investor confidence and a transition to a low emission system?

We believe that key to a successful emission reduction policy is functionality and consistency.

The cotton industry has an approved methodology under the emissions reduction fund - *Fertiliser Use Efficiency for Irrigated cotton*. Unfortunately there are no projects that we are aware of using the cotton methodology at the present time. A factsheet has been developed for the benefit of cotton growers detailing the economics of implementing the approved the cotton methodology under the ERF scheme. As detailed in the factsheet, and according to a theoretical case study using average ERF auction prices and aggregation of projects using the cotton methodology, there was no financial return. This is due to high administration and auditing costs associated with participation in the ERF scheme.

The cotton industry continually looks and assesses the available approved methodologies under the ERF that may be applicable to cotton growers (energy efficiency, soil carbon) however the same hurdles appear to be experienced across the board. One potential opportunity may involve streamlining of administration requirements that would allow bundling of a 'whole farm carbon story', however in speaking with the Department it is our understanding that under the current ERF policy such opportunities can't be pursued.

Given there are functionality issues associated with the current ERF program it may filter through to certificate pricing. While it is beyond the remit of the Finkel Review to look at the machinations of the ERF scheme, it is worth noting that there are failings within the current scheme that limit the participation of many sectors.

Some of our cotton growers have accessed funding under the RET (Small-scale Renewable Energy Scheme) and we have heard positive stories based on their personal experiences, in regards to the improved viability of capital investments in alternative energy using funding available through the RET. Our industry however is aware of the adverse impacts associated with the RET scheme as it currently stands. We would encourage to address these challenges during the 2017 review of the Government's climate change policy.

Chapter 4 – Integration of Variable Renewable Electricity

4.2 Should the level of variable renewable electricity generation be curtailed in each region until new measures to ensure grid security are implemented?

We believe it may be premature to curtail all renewable electricity generation – instead we would recommend a focus on expediting those identified technical solutions that can improve the reliability of the technology.

Cotton Australia and NSWIC would support the introduction of robust standards around alternative energy sources to ensure the reliability of installed generation solutions. We believe that performance standards around alternative energy sources would also assist in the contribution of distributed energy generation to grid resources and instil confidence in consumers regarding product performance.

Chapter 5 – Market Design to Support Security and Reliability

5.1. Are the reliability settings in the NEM adequate?

The reliability standards set by the NSW Government have been a major driver of previous capital investment in the distribution network and warrants close review. The Institute of Sustainable Futures produces a constraints map of the distribution network and according to the data (which is provided directly by the networks) there are no areas warranting investment as a result of excessive demand. This data supports our argument for the inefficient level of capital investment that has been undertaken by the network companies in the previous ten-year period, which has resulted in a 'gold plated' infrastructure network. NSWIC and Cotton Australia believe that in order to avoid any future network expansion and unnecessary augmentation a close review of the standards is warranted.

In particular, it needs to be assessed what the 'willingness to pay' of consumers is now in light of alternative options to potentially provide 'back-up' supply through off-grid solutions and/or the existence of energy storage systems. It can be assumed that given these alternative options, consumers' willingness to pay for high reliability from the grid has diminished to a degree (or will diminish when the technologies are proven to be effective).

Similarly, we believe that substantial work needs to be done to accurately assess consumers ACTUAL 'willingness to pay'. Essential Energy used feedback received from customers as a justification for continued high levels of capital expenditure in its network revenue determination. Cotton Australia and NSWIC reviewed the Essential Energy 'Willingness to Pay Study', noting that the work only took into account household energy users, failing to accurately reflect the views and attitudes of larger energy users (such as irrigators) who face more significant impacts from large increases to network charges. Within the 'Willingness to Pay Study' the scenarios provided to consumers did not represent an accurate reflection of the actual changes that Essential Energy would face in the event of a reduction in revenue. For example, the scenarios identified increases in network blackouts and slower maintenance response times as a consequence of reduced network charges. We believe that the exact hours / number of service blackouts is hard to pin-point as revenue changes and that the exact nature of cost implications across a business are complex. As such providing consumers with numbers that correlate to altered

network scenarios may be a misrepresentation of actual network reliability. While we understand that consumers expect a certain level of service, we do not believe that a household-based study can be used as justification for significant ongoing capital expenditure. We believe that consumers would be far less willing to pay for high reliability standards given the costs imposed under such a system.

In relation to the discussion around capacity, we would have grave concerns around the introduction of a capacity market, which requires predictions of demand in order to match supply and demand requirements. Given the significant issues predicting demand requirements previously, along with a lack of understanding of behind the meter investment and generation capacity we believe that working towards a capacity market would cause significant challenges. In the event that there was a system put in place that enabled the assessment of the behind the meter investment, further investigation may be warranted.

Chapter 6 – Prices Have Risen Substantially

6.2. What are the alternatives to building network infrastructure to service peak demand?

As outlined in the introduction, as the National Electricity Market is changing, it must be ensured that the integration of new technologies (including intermittent renewable energy) are coordinated and well managed to avoid any inefficiencies or any other unnecessary costs. Despite this urge of caution, Cotton Australia and NSWIC believe that irrigators and growers, together with the regional communities, have an important role to play in bringing about change. Our respective organisation believe that the irrigation sector could play a role in active demand management, embedded and distributed generation.

Under the current framework and technological advances, growers and irrigators have limited ability to offset their energy use. Despite this, they are actively looking for mechanisms that can offset their energy costs, making the timing ‘right’ for investigation of alternative energy sources. We believe that this creates a perfect scenario for investigation of mutually beneficial outcomes for both networks, irrigators and the broad church of electricity consumers. We believe well designed and placed research will ensure the networks do not lose irrigators as grid customers, peak demand loads can be reduced and there is potential for individuals to feed energy back into the grid to offset their requirements for future network augmentation.

6.3 What are the benefits of cost reflective prices, and could the benefits be achieved by other means?

As outlined previously, the introduction of ‘cost reflective’ tariffs in a system that has spare capacity appears absurd.

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 have caused perverse operational outcomes. The tariffs and associated costs are pushing irrigators to alternative energy sources – moving them away from the electricity grid – or forcing them to shut down their electricity intensive irrigation equipment.

In a recent example, 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.

Incentives should be provided to growers to remain on the grid and utilise the existing grid most optimally. We believe 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 we support 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 towards a scenario where electricity from the grid becomes unviable, is not in the interest of the grid. 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.