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Re. Submission Energy Security Target and Safeguard 2020

Thank you for the opportunity to make a submission on the above paper.

The National Irrigators Council is the National peak body for the irrigated agricultural sector, our members use irrigation water to produce more than 84% of the vegetables, fruit and nuts grown in Australia, nearly 100% of the cotton and rice; along with most of the dairy and sugarcane.

Energy is a significant input cost for irrigated agriculture, any lifting or pressurising of water means operating pumps and they are significant energy users. On top of that many irrigated crops require energy intensive cooling, packaging or processing.

Significant increases in energy costs over the last few years have made Australian agriculture less viable and less internationally competitive.

We strongly support initiatives that can help irrigators and farmers in general to reduce their energy costs. We also support measures to assist and encourage the agricultural sector to reduce emissions.

On that basis we are supportive of several of the proposals outlined in the paper.

This submission will only deal with those aspects that we feel qualified to comment on. Unfortunately, despite the agricultural sector being a vital industry and key end energy user we do not have resources to provide expert input or research on energy issues.

First though, a general point around energy security or reliability standards.

Over a number of years our sector has pointed to the very significant cost imposed on agriculture via network costs, in particular, costs imposed on rural consumers for networks built to meet reliability standards that are higher than are absolutely necessary and networks built to cope with urban cooling loads at peak times.

We recognise that network reliability standards are vital however these must be balanced with cost to consumers. To the extent that the Energy Security Target includes network components we would urge that any proposed investment is carefully balanced against cost to consumers. This consideration needs to

specifically include impact on primary producers who are often not contributing to peak demand in the same way as households.

We would be concerned if energy security measures outlined in this proposal duplicate national measures or create additional costs for consumers.

In particular, NIC has concerns about making reliability the priority over other factors. As past overinvestment passed on to consumers has shown, there must always be a balance of reliability versus cost.

Response to specific issues:

Implementation timeframes

NIC / Ag Energy Taskforce would support the implementation of initiatives for demand reduction and fuel switching activities as soon as possible. Both initiatives offer the potential for benefit for both emission and cost reduction for farm businesses.

The primary driver for most farm businesses will be cost. Rising costs of grid supplied power have seen many farmers, particularly irrigation farmers and those with a need for cool storage, face unsustainable input costs.

Farmers have been early adopters of renewables, in particular, solar. Unfortunately, solar doesn't solve all needs and the high cost of grid power has also seen a move off grid, in many cases, with increased use of diesel.

While this has sometimes been the only affordable option it is not a positive outcome in terms of fossil fuel use.

Many parts of the agriculture sector and individual farm businesses are also actively looking at how they will be able to reduce emissions and achieve net zero or better.

Farm businesses are making decisions about their energy costs now, and the soon any incentive to move to cleaner alternatives or to reduce peak demand can be introduced the better.

Our only point on design of programs is that they need to be clear, consistent and reasonably simple. They need to provide farmers with certainty over the period of the life of an investment in an energy source. We would be supportive of programs that enabled third party organisations to facilitate the process for farmers or aggregate demand savings.

Queensland and Victoria have both had success with funding of on-farm energy audits. It is suggested that this would be a good first step to provide firstly a baseline on energy use but then a properly planned suite of demand reduction and appropriate energy generation or storage options for farm businesses.

Fuel switching activities

An initiative to provide incentives to switch from stationary fossil fuel diesel power to cleaner energy would be strongly supported by the agricultural sector. We do not have expertise on the mechanism, but a market-based certificate system seems reasonable.

The program should not limit the potential sources of the cleaner energy and it should include potential for systems involving storage.

Solar is clearly the most mature of the renewable sources available to substitute for fossil fuel in stationary generation. However, there may be a range of other power sources that are and will be available for agriculture. Currently one of the reasons for many farmers having diesel generation or pumps is that solar is not able to provide the power at the times they require it.

The cost of storage is still prohibitive for most farmers, however, it would be important to ensure that a system involving storage is eligible for the proposed certificates.

We would also wish to encourage development of on farm energy sources including wind, bioenergy, hydrogen etc as part of the mix.

Question 21 relating to measurement is important. We emphasise that there is a need for any program to provide certainty and not be too complex. A program that requires a significant outlay on auditing or administration by farmers is not likely to be taken up widely. Having said that though we would support a program that provided (funded) on-farm (whole of farm) energy audits which could then provide baseline information for the savings to be calculated.

Regarding question 22, NIC does not have information about the number of diesel generators or pumps that might be able to be replaced in NSW. We would expect though that with over 5,000 irrigating businesses and 25,000 farms (ABS 2017-18), there is a significant potential.

Peak Demand Reduction

In submissions to various Federal inquiries and regulatory processes the Ag Energy Taskforce has consistently advocated programs to encourage demand reduction and peak demand reduction in particular.

Research undertaken for the Ag Energy Taskforce in 2018-19 by Sapere Research Group (funded by Energy Consumers Australia), "Empowering Irrigation Consumers Electricity Purchase Arrangements", indicated that among irrigation energy consumers there is a clear knowledge gap – but potential to do much more.

Respondents generally indicated that they would like to be able to engage in demand response, but felt they would not be able to, whereas assessment of their

actual energy consumption indicated that their operations were suitable for appropriate demand response management.

The work undertaken in coming to this conclusion included surveys and interval data analysis. The outcomes are discussed further below.

Cost reflective prices would be lower than current prices

The Sapere research confirms that Irrigators currently pay excessive costs for networks compared to the demand they generate. The assessment based on survey results and analysis of interval data is very relevant to the demand response question because it highlights that:

- *There is no evidence to suggest that irrigation demand is high let alone increases during extreme heatwaves, when maximum annual demand and very high power supply costs are most likely.*
- *It appears unlikely pumps are running at full capacity at times of peak system demand. Across states and different types of primary produce, use of pumps predominantly coincides with times when system demand is at just 30-55 per cent of system annual maximum demand.*
- *Seasonal irrigation demand peaks in late spring (Queensland) or early summer (elsewhere) reflect rainfall variations between regions. Demand peaks are not driven by very high temperatures.*
- *While about 45 per cent of irrigation equipment operates continuously over a day, other equipment is operated predominantly overnight and at a minimum during afternoons (at the mostly likely time of system peaks).*
- *Pump demand profiles are demonstrated by interval data generally to be 'flat': that is when pumps are being used, demand is at/above 90 per cent the pump's maximum demand.*

The non-coincidence of maximum irrigation demand with maximum system demand has a direct effect on the delivered cost of electricity, both wholesale and network (transmission and distribution), for irrigators. For example, Table 1 below provides the volume weighted average (VWA) wholesale electricity costs of individual irrigation demands compared with the VWA costs of the system demands represented by the deemed profile for small customers. These clearly demonstrate the reduced wholesale cost (using half hourly wholesale price data for the relevant periods) of different irrigation profiles compared with the relevant deemed demand profile." (Sapere Research Group, 2018, p. vii)

Table 1 Comparison of volume weighted average spot market costs

Individual irrigation demand prices are compared with contiguous aggregate prices ($/MWh)

DNSP	Crop	Irrigation profile	Deemed profile	Irrigation/deemed profile
Ergon	Sugarcane	$48.06	$107.83	59%
SAPN	Fruit and nuts	$82.51	$134.95	64%
Powercor	Lucerne 1	$68.84	$82.60	83%
Powercor	Lucerne 2	$63.07	$82.60	76%

DNSP	Crop	Irrigation profile	Deemed profile	Irrigation/deemed profile
Powercor	Tomato	$58.32	$82.60	71%
Powercor	Cotton	$49.57	$82.60	60%
Powercor	Tomato	$56.11	$82.60	68%
Powercor	Cotton-Lucerne	$60.85	$82.60	74%
Powercor	Cotton	$50.49	$82.60	61%

Analysis of use of, and capacity for, demand response

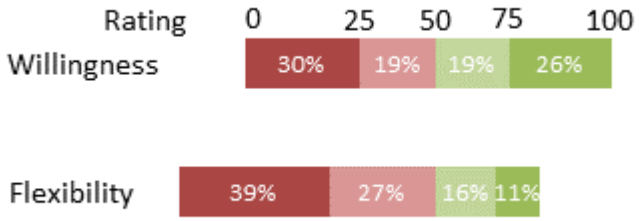
In discussing demand response, the Sapere study said:

"Demand response refers to the ability of electricity consumers to change demand for electricity in response to signals from suppliers at particular times of high demand. This signalling may be 'passive' based on a price signal to which a consumer may or may not respond, or it may involve ceding the network operator some control over the consumer's demand in return for a lower price overall.

Just seven respondents reported that they already engage in demand response, mostly some form of time of use or off-peak demand control tariff. One South Australian respondent included their involuntary move to a transitional demand tariff.

Respondents were invited to indicate on a scale from 0 to 100 their willingness to consider demand response incentives, and the flexibility/adaptability of their irrigation system to participate in such schemes. Figure 19 suggests that while there is a strong willingness to consider demand response strategies to controlling irrigation costs, there is a countervailing perception of a farm's flexibility/capability to do so." (Sapere Research Group, 2018, p. 22)

Figure 1 Flexibility and willingness to consider demand response



The survey results indicated a willingness to engage in demand response but a lack of flexibility.

However, when actual interval data was examined it became clear that most irrigation consumers would have a far greater capacity to engage than they realised.

On the basis of their interval data analysis Sapere concluded that:

"Our comparison of survey responses and interval data suggests many irrigators could under-estimate their capacity to power down demand during limited high system demand/high price periods. This is because they typically perceive a coincidence between their own maximum demand and system maximum demand that is much higher than the actual coincidence.

As noted earlier, our quantitative analysis of irrigator demand profiles strongly suggests that the likelihood that high irrigator demand coincides with high system demand periods is very low. This means there is an opportunity for irrigators to engage with various demand response signals." (Sapere Research Group, 2018, p. 36)

This research supports the view that there is a much greater capacity to engage in demand response but that it is hampered by lack of knowledge, as well potentially, by lack of appropriate equipment.

On that basis we would be very supportive of action that would provide an incentive for farmers to undertake demand reduction and particularly peak demand reduction.

Eligible peak demand reduction activities

With sufficient flexibility each of the three eligible activities could serve the aims of the program via agricultural users:

1. Peak demand savings – it is noted that the discussion around this focuses on appliances including refrigeration and air conditioning. It would be important to ensure that if a definition is provided of the type of equipment that is eligible under this category, it is broad enough to include any equipment powered from grid supplied electricity.

   In particular this submission would point to irrigation pumps. Electric irrigation pumps are significant energy users and often very real energy savings can be gained by ensuring that the pump is modern and best suited to the situation. For example, many irrigators have achieved significant energy savings by putting in new variable speed pumps.

   It is acknowledged that these savings are spread across the day and not necessarily focused only on peak times but, as outlined in the paper, they do have a peak impact as well.

2. Peak Demand Response – As the research quoted above indicates, farmers and irrigators, in particular, often have significant capacity to engage in specific programs to temporarily reduce load at peak times. Queensland

irrigators have been working with their energy providers for some time on specific use tariffs in this area.

We would welcome options being provided in this area in NSW. Rolling this type of system out would need some effort to provide education and suitable equipment (including the meters) for those who might be able to take advantage.

3. Peak demand shifting – as mentioned above there is significant potential for many irrigators and primary producers to participate. Depending on the watering needs of crops, on farm infrastructure or other requirements such as cooling, permanent arrangements can be made to avoid peak use. Automation of systems often helps to make this possible – for example, automated watering systems can reduce the need for manual labour and make overnight watering more practical.

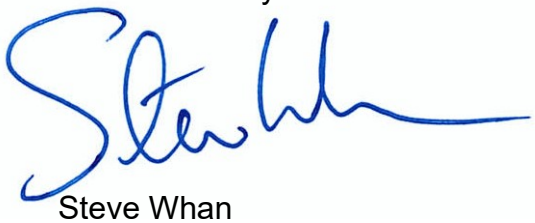
   As mentioned above, our research has found that many irrigators have the capacity to structure their operations in this way however may lack the knowledge or equipment to do so.

   Noting, as well, that our research confirmed that irrigators operating pumps already have quite different demand characteristics to urban cooling loads and that they are being overcharged for networks designed to cope with those essentially urban loads.

As mentioned above our response to these proposals overall is supportive and we congratulate the NSW Government on its initiative and on having a firm emissions target.

Farmers are early adopters of technology and their take up of renewables is no exception. We look forward to seeing more details of how these initiatives will be rolled out and made accessible to agriculture in the broadest way possible – with the least possible cost to consumers..

Yours sincerely



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