

21/02/2020

Australian Energy Market Operator
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Submitted by email to: isp@aemo.com.au

LYON GROUP RESPONSE TO DRAFT ISP

Lyon welcomes the opportunity to provide the following to the Australian Energy Market Operator (AEMO) in response to its request for submissions in relation to its Draft 2020 Integrated System Plan (Draft ISP).

Lyon compliments AEMO on the Draft ISP, for the detail that it provides and for providing a clearer view on the way forward for the sector. AEMO's role is increasingly relevant as a large number of widely dispersed and necessarily clean generators supplant a smaller number of aging thermal generators.

Having said that, AEMO is one party in a much wider set of institutions that determine policy and market settings and the direction of the sector (e.g. COAG Energy Council, Australian Energy Market Commission, Energy Security Board). The policy direction pursued by these institutions must be consistent and coordinated in order to achieve an efficient outcome from electricity infrastructure planning.

AEMO's stated primary objective for the Draft ISP is:

*'to maximise value to end consumers by designing the lowest cost, secure and reliable energy system capable of meeting any emissions trajectory determined by policy makers at an acceptable level of risk.'*¹
[emphasis added]

Lyon notes that the focus of the above objective is to maximise value to consumers. This implies that it is the cost to consumers that is paramount, not the wholesale energy price. Wholesale energy costs are one part of the total cost to consumers.

In recent times, the heavy focus on the cost of renewable energy generation and its impact on the wholesale energy price has distorted policy and created cross subsidies from transmission to renewable generation. Or put another way, consumers have been paying economically inefficient transmission costs so that wind and solar projects can avoid managing their unstable power.

As such, we consider that AEMO's ability to develop a 2020 Integrated System Plan (Plan) that is consistent the above objective and with the National Electricity Market (NEM) objectives is significantly hindered by the lack of clear policy and clarity about its implementation.

The delays in the much needed market and regulatory reforms to the sector make it almost inevitable that the Plan will produce a less than optimum result, provide for cross subsidies to renewable generators, create barriers to entry and reduce innovation. AEMO goes some way to acknowledging this in its Draft ISP.

¹ <https://aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp>

To be economically effective and efficient, planning for infrastructure should either follow clear policy objectives that have been established and understood, or, as a matter of policy, be used as a tool to lead to specific and defined outcomes.

In this regard, Lyon is particularly pleased to note the following statements in the Draft ISP:

'While this roadmap provides guidance on many critically important questions relating to Australia's energy transition, market and regulatory reforms are also needed for the ISP to achieve its objectives.'

'Market reforms currently being reviewed should be pursued. The ISP's low-cost, low-regret development path will only be achieved and can only translate into consumer benefits through market arrangements that encourage the optimal use of existing resources and give appropriate signals for further investment. Market design needs to recognise and reward not just the provision of energy, but the increasing value of flexibility and dispatchability in complementing and firming variable generation as well as providing other system security services currently provided by the existing generators scheduled to retire.'

Lyon strongly agrees with the above statements.

But we are less constrained than AEMO, so we would go further and assert that, without urgent appropriate market and regulatory reform, the Plan will not drive transmission planning and investment decisions that result in an optimisation of network and generation investment decisions, it will cause an inefficient allocation of large amounts of capital, it will deliver lower economic and community wide benefit, likely lead to higher prices to consumers than necessary and undermine Australia's international competitiveness.

In addition, Lyon is concerned that evident in the Draft ISP is a:

- willingness to be influenced by a false paradigm that utility wind and solar generation can only be intermittent and uncontrolled and therefore must be supported by an economically inefficient spend on transmission;
- lack of awareness of already available flexible, stable utility solar and wind, which open more planning options than are evident in the draft; and
- lack of alignment between the required market signals and the Draft ISP.

Lyon recognises that AEMO is in an invidious position in developing the Draft ISP and is caught between parts of the industry calling for additional spending on transmission (primarily so they don't need to take responsibility for the quality of their power and will benefit from a cross subsidy from the transmission sector) and other parts of the industry wanting delays in much needed market and regulatory reform (primarily to protect their current market position).

However, it is not appropriate to implement a Plan that will provide incentives that are contrary to market signals, the proposed market reforms, NEM objectives and AEMO's objectives for the Plan.

The consequences of a large amount of unstable wind and solar generation being connected to the national electricity grid, including connection difficulties, curtailment, adverse changes in marginal loss factors, low and negative pricing during peak solar and wind production, and increasing causer pays charges, were all highly predictable.

In some part, this lack of ability or willingness to foresee the consequences has arisen from the disconnect between energy and environmental policy and the disconnect between effective and efficient planning for the required infrastructure and the implementation of appropriate market signals. In other parts, its simply been a result of ignoring the reality.

In any event, it is not the role of AEMO or other NEM governance institutions to compensate for poor business decisions. Further, it would be in direct contradiction of the NEM objectives to do so. Markets deal with poor business decisions far more efficiently.

While the Draft ISP implies the fundamental proposition that existing transmission infrastructure capacity should be utilised before augmentation and new builds, it is disappointing that the false paradigm that utility solar and wind can only be weather-dependent (and provide uncontrolled low quality power) is still evident and influencing planning.

Lyon notes that it is not only market design and regulatory frameworks that can create barriers to entry and innovation, it is also the case with infrastructure lead plans. Therefore while the Draft ISP is a valuable step forward, it has the potential to create significant distortions in the sector if it does not give greater consideration to the quality of the power that utility solar and wind dispatch (as defined by AEMO's system strength requirements report) and how this is incorporated.

Pushing intermittent generation into renewable energy zones (RTZ) where grid strength is higher warrants that approach based on an ability to access unutilised network infrastructure. But without recognition in the Plan that utility scale renewable generation can provide grid strengthening services via the quality of its power we will see an outcome contrary to proposed market reforms and:

- an overspend on transmission;
- cross subsidies to generation; and
- higher cost to consumers..

The vital and speedy transition away from a carbon based to renewable based electricity sector requires recognition that grid connected utility wind and solar:

- can be designed to operate with greater or lesser (or practically zero) stability and flexibility (this is a choice available to developers and owners of wind and solar projects, not an absolute limitation of the technology); and
- when designed to do so, can be built in locations that can be more useful to enhancing system stability or diminish system stability (once again this is a choice of the developers of the projects); and
- the cost and other outcomes of these key considerations is ultimately borne by energy consumers, so they have a right to expect that the Plan and market signals produce an optimised outcome that maximise the consumer benefits.

The output of utility solar and wind does not need to be considered homogenous nor does it need to be firmed via inefficient means.

AEMO indicates that it has undertaken considerable modelling in determining the optimised Plan. Lyon notes that unless this modelling includes an appropriate recognition that wind or solar integrated with battery storage can provide electricity that has multiple system security benefits and therefore defer network augmentation, the Plan does not represent an optimal outcome².

The Draft ISP indicates a significant potential use of utility scale grid connected energy storage.

Utility scale wind and solar integrated with battery storage (an Integrated Project) is distinctly different to a wind and solar project that is co-located with battery storage or battery storage connected to the grid not located with a generation source.

An Integrated Project provides different network support services and power characteristics. It has the ability, were purpose designed for the network and energy flow characteristics at the network connection point, to strengthen the grid, defer transmission augmentation and increase energy flows through the weaker parts of the grid.

An Integrated Project can also significantly reduce the risk of being constrained off and has the capability to positively influence its MLF and reduce MLF fluctuations which allows more renewable energy to be transmitted without augmenting the grid.

Further, transmission costs are regulated and face no competitive pressures, so additional spending on transmission infrastructure is recovered directly from electricity consumers and then flows through to the economics competitiveness.

² Lyon is very familiar with the various models used in major infrastructure planning exercises from its planning and industry reform experience in a number of infrastructure dependent industries in Australian and oversea.

In effect, standalone renewable generation receives a cross subsidy from consumers via transmission spend cost recovery where transmission needs to be augmented to compensate for the unstable power produced by standalone wind and solar generation. This is not the case with an Integrated Project.

An Integrated Project faces competitive pressure in the wholesale energy market without cross subsidies from transmission (i.e. end consumers of electricity). No transmission augmentation is required for Integrated Projects as they deliver power to the grid consistent with most of the AEMO system security requirements and enhance grid strength at their connection point.

Given the benefit of Integrated Projects is it particularly disappointing that the Draft ISP appears to:

- present barriers to Integrated Projects and their ability to accelerate deployment of standalone renewable energy;
- present barriers to great utilisation of existing transmission infrastructure;
- present barriers to the release of more renewable energy from exiting wind and solar projects;
- underestimates the value of Integrated Projects to reducing the spend on transmission infrastructure leading to additional costs to consumers;
- underestimate the ability of Integrated Projects to assist in the optimisation of future investment decisions between generation and transmission infrastructure;
- limit the ability to gain greater flexibility in planning options (with attendant costs of the loss of optionality); and
- ultimately leave consumers with higher costs than necessary to transition from a carbon based to renewable based electricity sector.

In relation to system planning and market settings, Lyon has a strong preference that these incentivise delivery of greater stability, flexibility or other kinds of valuable power system requirements, rather regulatory requirements set at levels above that which are economically inefficient.

The false paradigm that appears strongly entrenched in Australia that utility wind and solar can only be uncontrolled power sources feeds into a false dichotomy that either is at, or could be read as, being at the heart of the Draft ISP.

Notably, this false paradigm does not hold sway in a number of countries where Lyon operates as the focus has turned to unlocking vast renewable resources quickly and dealing with major network constraint issues effecting the economics of exiting wind and solar investments. Regulators in other countries have recognised that for the rapid deployment of wind and solar projects to continue, the economics of the investment must work and that Integrated Projects will play a major role in unlocking existing constrained capacity and allowing for accelerated development of wind and solar projects.

Dispatchable resources and power system services will become increasingly important as the penetration of variable utility wind and solar and of distributed energy resources increases. The same is true of new grid infrastructure. However, the volume and expense of supporting dispatchable resources and power system services (and of costly grid augmentation) cannot be optimised without appropriate consideration of the fact that utility wind and solar can be incentivised to be more stable and flexible, and to supply system stability services and deliver dispatchable power as against create demand for them.

If properly integrated with customised battery storage behind a single power plant controller, utility wind and solar can become flexible clean generation.

Flexible clean generation can manage key risks: sagging midday NEM prices, FCAS costs, congestion and losses. Most importantly for ensuring that the Draft ISP is a document and process that facilitates economically efficient energy transition with lower political risk, drive much less need for costly “firming”, grid stabilisation and network augmentation.

Lyon understands that these issues are well understood by many within AEMO and that energy transition will be smoother, faster and less costly if that understanding is better conveyed in the final version of the Plan.

The ISP process is the right opportunity for AEMO to take the lead in helping the broader industry to widen its thinking about clean utility generation and battery storage as necessarily separate resources, and to raise

the bar in a way that unleashes the next generation of utility solar and wind so that they can become Australia's primary source of electricity.

Questions regarding this submission should be directed to Luke Brown, General Manager Commercial via lbrown@lyonasia.com.au or +61 (0) 403 805 310.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'David Green', written in a cursive style.

David Green
Chairman