2019 PLANNING AND FORECASTING

Response to AEMO consultation paper

March 2019

1. Introduction

Thank you for the opportunity to provide feedback to the consultation process on AEMO's 2019 Planning and Forecasting.

AEMO's forecasting and planning functions have been key foundations to the long-term reliability of the National Electricity Market (NEM). The importance of these assessment remains, however the nature of the power system and its reliability is changing with the changing technology mix. It is important that these processes evolve to capture these changes to provide the right investment signals to industry.

Stanwell appreciates the complexity and effort of these models and AEMO has done well to continuously improve its approach. However, it seems that supply adequacy is becoming multi-dimensional and the original construct of the forecasting and planning assessments is becoming less appropriate.

AEMO can not be expected to change its models and processes overnight, but it would be appropriate to see the assumptions and scenarios here better reflect how the system is changing. In particular:

- Evolving the market model such that it also considers the broader elements to supply adequacy, and associated value;
- Consider the distribution and transmission networks more symmetrically particularly if assumptions about high levels of distributed energy resources (DER) are employed.

Without acknowledging the changing nature of supply adequacy, neither the Electricity Statement of Opportunities (ESOO) nor the Integrated System Plan (ISP) can provide a blueprint for the future power system.

Given the ESOO will inform the Retailer Reliability Obligation (RRO), it would be apt for AEMO to expand the consultation for the demand forecasts beyond the Forecasting Reference Group (FRG). Without further details, Stanwell also questions whether the market model approach described is the most efficient process for setting a short-term reliability gap for which retailers will be obligated to invest.

Stanwell welcomes the opportunity to further discuss this submission. Please contact Joe Hemingway on (07) 3228 4516.

2. Scenarios

The forecasting and planning scenarios are designed to reflect uncertainties in future inputs and assumptions, and AEMO has concluded that the core scenarios used in 2019 still strike the appropriate balance. Stanwell disagrees that these particular scenarios, year on year, appropriately reflect the uncertainties of the future power system.

Stanwell appreciates AEMO's desire to maintain consistency in the scenarios across years to allow for comparison, and agrees that this is important for the neutral scenario. The bookend scenarios, however, should be flexible to the changing dynamics of the power system.

AEMO has listed the level of DER, the uptake of utility-scale renewable generation including coal retirements and the level of energy demand as the three relevant dimensions. The outlined combinations of the three dimensions are proposed to represent the broadest power system development outcome. This is true; however, the scenarios do not explore these dimensions adequately in terms of the broader impacts on supply adequacy in terms of the system security and resilience implications of these technology mixes. In particular, there has been much discussion from AEMO about the need to "operationalize" reliability, signaling it is increasingly inappropriate to plan the power system to one standard but expect it to operate to another.

Stanwell emphasizes that it is not critiquing AEMO's modelling, rather acknowledging that the system is changing beyond the original intent of these models. In the first instance, this can be addressed in understanding the intent of the scenarios and the appropriate investment signals.

Intent of scenarios

Stanwell suggests that it no longer seems appropriate to consider scenarios based on stretching the expected level of consumption. Historically this approach was appropriate including the anti-correlation of DER with economic growth.

This concern is emphasised by the increasing number of inputs into the forecasts, many by external consultants where the correlation between key variables is not clear. It is not obvious that any resultant contradictions from the inputs and assumptions are adequately resolved or alternatively risk being magnified by in the inputs to the forecasts and models.

Examples of some conflicting assumptions in the scenarios include:

- In the Fast Change Scenario, it is stated that strong cost reductions in utility-scale generation and storage shift focus away from DER, yet consumers embrace electric vehicles (EVs). Consumer investment in EVs and DER has the same broad underlying drivers, and these are disconnected from the drivers of utility-scale assets. There is concern that this economic "rationale" is then applied to other parts of the forecast.
- In the Slow Change Scenario it is stated that there are weaker drivers for energy system transformation. However, this scenario assumes high installations of DER which in itself reflects system transformation and a need for certain generation characteristics.
- Despite the intent to adjust demand side participation (DSP) and DER settings to increase internal consistency between drivers affecting uptake of DER components, such as rooftop PV, battery systems, and EVs, the scenarios have contradictory assumptions on DSP and DER due to the anti-correlation. For example, the fast change scenario indicates a stronger need for DSP but low uptake of DER. Logically, market efficiency would dictate that signals for the value of DSP would incentivise uptake of DER. It does not seem plausible to limit DSP to large loads only in this instance.
- It is also unclear why high DER is deemed a scenario but the utility scale equivalents are sensitivities. The High DER Scenario is a valuable sensitivity to the neutral scenario but is more reflective of the role of the transmission system as the underlying measure.

AEMO needs to be much clearer about the intent of the scenarios. Is it to create the maximum and minimum demand from the transmission system, the changing role of the transmission system, or other? A clear intent would then negate some of the conflicting narratives of the scenarios as the objective is clear.

Investment signals

A disappointing omission from the scenarios is the lack of market signals at the transmission level that would be inevitable with the changing technology mix. The scenarios are currently only underpinned by the assumption the investment signals for utility-scale are generator retirements and costs. This seems increasingly implausible and Stanwell would like to see scenarios that include market modeling that reflects the market signals that are likely in future.

We appreciate that changing market frameworks in the modelling is complex and will need to be iterative, however, it is important to recognise that to satisfy its role of providing industry with future investment signals via the ESOO and ISP, these changes need to be explicitly addressed. AEMO has increasingly

published information about how the power system is becoming more complex and operational and long-term planning decisions are no longer focused solely on bulk energy supply.

Supply adequacy will increasingly have more dimensions to consider and these need to be reflected in the ESOO and ISP scenarios. Without these considerations, the development of the NEM under a range of different futures will fail to effectively and efficiently identify requirements for managing increasing uncertainties and the key material issues that impact reliability, generation and transmission development.

The consultation paper indicated that any potential ancillary services benefits of battery and pumped hydro storage options are not included but will be quantified externally. This is a welcome step; however, ancillary service benefits need to be considered for all technologies in the scenarios, particularly if retirement assumptions are to be made based on expected revenue.

As part of the Rules obligation, AEMO needs to report on potential inertia and system strength gaps. It also indicated that it will continue to explore and report on efficient solutions to deliver these system services. It is unclear how this can be achieved under the current scenario assumptions and modelling approach. Stanwell would welcome further information.

To address these issues, bookend scenarios could focus on the mix of technology at both the distribution and transmission levels as a driver of the system needs rather than an outcome of market modelling that at present doesn't fully value all services. For example, exploring how increased DER could impact on the investment needs for utility-scale generation, storage and transmission is incomplete if not capturing the role of the transmission system in delivering system services.

3. Inputs and Assumptions

Energy consumption and DER

Given that the assumptions on energy consumption underpin the scenarios including the bookend ones, detail on these should be part of the consultation. Stanwell appreciates the role of the Forecasting Reference Group (FRG) and participates within this group; however, it does not provide adequate representation of the policy, market and regulatory implications of the ESOO and ISP.

In particular, if AEMO's modelling commences with the previous year's forecasts, then it is unclear that the assumptions and discussions remain relevant. Stanwell is also concerned that these outdated forecasts provide critical inputs into subsequent forecasts, for example energy prices. While this is standard for the initial modelling run, it is not apparent that the results of the forecasts are iterated until equilibrium is reached, and greater transparency on this would be welcome.

Assumptions on consumer DER are appropriate; however, Stanwell would appreciate greater information on how the requirements for inverter standards are to be utilised. For example, is this the equivalent of assuming all utility-scale new build meets the technical performance standards and thereby does not create security risks, or is it utilised as an active parameter that facilitates DER participating in aggregated models?

It is unclear whether DER, being a key component of each scenario assumption, will be exposed to signals to facilitate their participation in the market (in addition to the Virtual Power Plants (VPPs) discussed), or whether their mode of operation remains static.

Furthermore, given the level of DER is a key dimension, it would seem imperative that AEMO include the referred enhancements of their benefits.

Generator retirements

In the consultation paper, AEMO states that emissions reductions in the Neutral and High DER scenarios will be driven by current Federal and State Governments' renewables energy polices and assumed 50-year end-of-life of coal-fired generation assets. Further to this, the emissions trajectory assumptions for the Neutral scenario say coal retirements will be adjusted to give effect to the trajectory while the modelling methodology states that these assets will be retired based on estimated revenue adequacy.

On 8 November 2018 a new Rule came into effect that imposes a requirement on scheduled and semi-scheduled generators to provide at least three years of notice of permanent closure of generating units. Additionally, all generators are required to provide AEMO with closure dates for all assets from 2 March 2019 for the explicit purposes of being used in AEMO's modelling, and update these dates as need be. The Neutral case should be using the retirement dates as notified by generators as these better take into account revenue adequacy, asset management, portfolio considerations and other factors.

Constraint Equations

Stanwell would appreciate more information on how the constraint equations are considered within the modelling. That is, are they part of the dynamic optimisation of the market model or applied independently?

The constraint equations that are excluded, particularly the FCAS constraint equations, while operational in nature, are important for the market modelling to determine a secure and reliable power system. This reiterates the concerns that the power system is being planned for one standard but operated to another.

Modelling improvements

AEMO has indicated that it may consider zonal or sub-regional topography if this approach would not compromise the integrity of the modelling. Given that DER is being considered as a non-network solution, it would be good for the modelling to consider distribution networks as each zonal region, and this could only enhance the integrity of the modelling.

Resilience

AEMO is assessing measures to enhance the resilience of the power system through network and non-network services. Some of the assumptions at the utility-scale have concerned the viability of aging generation assets.

Stanwell is keen to see aging network assets taken into account as well as an assessment of climate resilience of key transmission infrastructure, and the costs associated with adaption.

Asymmetry between distribution and transmission

The scenarios and associated assumptions display an asymmetry between the distribution and transmission levels. Again, these could be clarified in the intent of the scenarios.

Stanwell understands the rationale for utilising DER as a driver of transmission investment, however, it would be beneficial to understand AEMO's plans to integrate the distribution network into transmission planning. This would presumably be a key requirement of any plan that considers large levels of DER, particularly if they are going to be active in the market via VPPs, or at times contribute to congestion levels of the transmission network.

Marginal Loss Factors

In all proposed scenarios Marginal Loss Factors (MLFs) remain static and are based on the latest publication by AEMO. Between publications, some MLFs have deteriorated substantially, particularly where new utility-scale renewable generation has energised as recognised by AEMO.

Dynamic MLFs should be considered as a determinant to the location, timing and choice of new utility-scale generation. This would also tie in the aforementioned consideration for intra-regional modelling, in recognition of where load is required and the feasibility of meeting that load as well as associated financial impacts on new and existing utility-scale generators.

4. Retailer Reliability Obligation

The consultation paper refers to the need to amend assumptions for the ESOO due to the introduction of the Retailer Reliability Obligation (RRO), and refers to a workshop for this purpose in April. Given the RRO will have a material impact on retailers details of the planned consultation would be appreciated as soon as possible.

Some initial comments include:

- Given the criticality of the demand forecasts in determining the 50 POE, consultation additional to the FRG should be conducted, with all retailers able to participate. The group needs to have the appropriate technical, regulatory and policy understanding for this intent.
- The demand forecast needs to be as accurate as possible, and if the previous year's demand forecast is used to forecast retail prices, then Stanwell would expect there is an iterative approach to bring demand and prices into equilibrium, and hence greater accuracy.
- Stanwell appreciates that AEMO is working with the AER and ESB on the drafting of the RRO in regards to the treatment of DSP. It would be beneficial if retailers were also involved in this process as they will be the entities forming contract positions with DSP.
- Multiple reference years definitely need to be applied in the short-term modelling framework to provide the most accurate forecasts possible to inform the RRO.


stanwell