

14 April 2021



EnergyAustralia
LIGHT THE WAY

Mr Daniel Collins
Chair – Forecasting Reference Group
AEMO

EnergyAustralia Pty Ltd
ABN 99 086 014 968

Lodged via email: Energy.Forecasting@aemo.gov.au

Level 19
Two Melbourne Quarter
697 Collins Street
Docklands Victoria 3008

Phone +61 3 8628 1000
Facsimile +61 3 8628 1050

enq@energyaustralia.com.au
energyaustralia.com.au

Dear Daniel,

**Draft PV Battery and EV forecasts FRG Consultation
(FRG 31 March 2021)**

EnergyAustralia (EA) welcomes the opportunity to comment on the Draft DER Forecasts presented by Green Energy Markets and CSIRO at AEMO's Forecasting Reference Group (31 March 2021).

EA is one of Australia's largest energy companies with around 2.5 million electricity and gas accounts in NSW, Victoria, Queensland, South Australia, and the Australian Capital Territory. EA owns, contracts and operates a diversified energy generation portfolio that includes coal, gas, battery storage, demand response, solar and wind assets. Combined, these assets comprise 4,500MW of generation capacity.

EA is dedicated to building an energy system that lowers emissions and delivers secure, reliable and affordable energy to all households and businesses, which requires being a good neighbour in the communities we operate in. As part of this, we recognise Aboriginal and Torres Strait Islander peoples as the traditional custodians of this country and acknowledge their continued connection to culture, land, waters and community.

EA considers AEMOs scenario-based views of Rooftop PV (PV), batteries and Electric Vehicles (EVs) are significant and material assumptions feeding into a range of key studies such as the ISP and ESOO. Therefore, we support AEMO's ongoing focus on these customer-led drivers of the NEM's transition, including the procurement of multiple views for each form of DER (currently from GEM and CSIRO) given the fundamentally different methodologies they adopt.

The key points in this submission are:

- **It remains important that there is internal consistency between the assumptions.**

High uptake of rooftop PV has inter-dependencies with BTM batteries and EV uptake, and there will also be inter-dependencies between investments in stationary household batteries versus EVs, notably if V2G is promulgated or EV subsidies are introduced. We are concerned that picking and choosing different forecasts for these three inputs independently may inherently reduce internal consistency, which may also lead to inconsistencies with the AEMO ISP scenarios narratives.

The way in which AEMO intends to combine the respective GEM and CSIRO DER component forecasts will also play a key role in maintaining the necessary consistency across the scenarios, so we encourage AEMO to be clear about when it will be consulting on its scenario settings for DER components and how it will apply the discrete GEM and CSIRO projections, including highlighting any deviations from previous approaches.

- **Application of contradictory policy and capex assumptions appears a particular issue.**

While we expect different consultants to have their own methodologies, in the (draft) papers presented by GEM and CSIRO fundamental differences in underlying inputs appears a concern and AEMO and the consultants should explain the differences or rectify them.

Analogous to the earlier point about internal consistency, the intent of averaging consultant forecasts may inappropriately blend two contradictory policy assumptions together. For example, it was mentioned that the Net Zero and Current trajectory would be using the average of CSIRO and GEM forecasts for DER trajectories. There is a conflict in this methodology where CSIRO have stated they will not be applying the NSW Peak Demand Reduction Scheme in their modelling, whereas GEM will be. Averaging the two consultants' results for these two specific scenarios will create a dissonance in the scenario narratives as policies such as these have clear, notable impacts on the forecasting results.

- **We also consider there is insufficient information to provide focused stakeholder feedback.**

The slides shared do not make more effort to explain and justify the differences in methodology or assumptions relative to the 2020 study, and how some of these changes impact on results.

Further, the lack of State-based views makes it hard to evaluate the robustness of the different inputs given observed trends in each region (as affected by different policy and subsidies), and therefore the predicted installations over the outlook period.

More specific feedback across each of the DER component projections is provided in the following sections.

Rooftop PV

- Additional detail is required on whether GEM and CSIRO are incorporating assumptions about AEMO or NSP's being able to remotely control output of rooftop PV (this may increase the amount hosting capacity), plus views on how NSP technical restrictions may limit installations by supply zone (number and size by customer segment, etc, which may limit PV installs) – and therefore what impact these could have on uptake assumptions.
- EnergyAustralia supports the proposed increase in uptake assumptions for slow change scenario versus prior years.
- GEM previously had strong assumptions regarding combined solar/battery installations, and battery capex and subsidy assumptions would therefore impact the rooftop PV uptake assumptions. GEM's draft presentation is silent on this topic, and we would request greater transparency on this topic to better evaluate GEM's rooftop PV forecasts and any implicit dependence upon battery assumptions.

- GEM talks about three customer types and system configurations and about two tariff structures. It is not clear if this is for both batteries and solar, and whether these are sufficient to reflect the wide range of cases across all regions over the outlook period or whether they even reflect existing policy settings – for example do solar forecasts assume ongoing consumption tariffs?
- GEM forecasting rooftop PV and batteries without doing EVs appears an issue. EV uptake can directly impact BTM battery economics, especially if EVs have V2G discharges and are effectively mobile batteries with wider use case and emissions implications. Clearly the complexities of a payback model approach would be challenging here, but EA believes forecasting one component without the other can lead to inconsistencies, so suggests AEMO seek GEM's views on the interdependencies of these components
- Rooftop PV is certainly an area where a regional view looking at actual installs is key to providing transparency and insight – noting the observed material changes made to Victoria rooftop PV projections over recent periods.
- GEM has also adopted a 3c/kWh premium uplift to wholesale energy rates in SA, NSW and VIC to reflect what it sees as current FiT offers by most major retailers. While this seems reasonable and at the lower end based on current market offers, the basis for this assumption requires further explanation, particularly whether it is sustainable across the entire outlook period, as well as the sensitivity of the assumption on the draft projections.
- Similarly, the sensitivity to reductions in borrowing costs adopted by GEM also requires further explanation and analysis, and some discussion on how payback periods have changed given the suite input assumption changes would be insightful.
- Can GEM outline if there have been any changes to the carbon abatement revenue approach and inputs from previous versions and does the abatement revenue treatment (modelled as an upfront payments/reduction in capex) capture the time value of money and a suitably representative and methodologically consistent discount rate?
- It is not clear within the long-term retail price index methodology how the trend in network charges and tariffs across regions out to 2050 has been captured. Are they rising, falling or steady in real terms and how do these assumptions affect payback and uptake models?
- Further, does the use of a common weighted retail price index across all regions and the approach to extrapolating the intraday shapes (see for example slide 18 from the GEM slides) accurately capture the hollowing out of mid-day prices that is expected to be observed across the entire outlook periods for all scenarios, and therefore the economics of installs.

Batteries

- We would appreciate clarification on the divergence in battery capex assumptions between GEM and CSIRO, and how these have varied from previous versions.
- Inconsistent policy assumptions regarding battery subsidies etc. is an issue. In particular, the treatment of the NSW Empowering Homes interest free loans and the Peak Demand Reduction Scheme – to which GEM attributes a value of around 50% of the estimated capital cost of a battery in 2023 (ending in 2030 in the Central case, excluded in the Slow Growth, and enduring across the entire outlook in the Sustainable Growth, Net Zero and Export Superpower scenarios).

- GEM results show that the range of the number of installs is lower than previous versions, but that MWh-degraded numbers are similar, implying fewer, but longer duration batteries are being installed. Is this the case, and is this a function of the very aggressive reduction in price per kWh for residential batteries (*excluding* government subsidies, inc. GST) shown between 2020 and 2026 on slide 13 (for example which appears as a reduction from \$1100/kWh to \$400/kWh (64%) in the Net zero scenario)? GEM should also outline its capex price modifications to CSIRO's GenCost inputs in the short term. Specific commentary regarding battery duration assumptions and inclusion of installed capacity in MW would provide additional transparency.

EV's

- Noting only CSIRO have provided EV projection updates and they are not materially different to previous versions; we would like to understand what specific changes are proposed or are they limited to the application of assumptions across the new scenarios as outlined in the Table on slide 2.
- Will AEMO and its consultants consider V2G concepts and how this may affect uptake and charging/discharging profiles across scenarios?
- Charging profiles will have material impact on load shape and maximum demands. We would like to see commentary around what infrastructure will be required to support different charging profiles and some sort of sensitivity analysis regarding the impact of different charging profiles on maximum and minimum demands etc., as well as how the necessity for such new infrastructure could affect the uptake projections.

We would welcome the opportunity to discuss this submission further with you. Should you have any questions, please contact me via Patrick.Gan@energyaustralia.com.au or on 0411 380 313.

Warm Regards,

Patrick Gan

Portfolio Analyst