



UPC Renewables Pty Ltd
ACN 616 856 672
ABN 27 616 856 672
Suite 2, Level 2, 15 Castray Esplanade
Battery Point, TAS, 7004

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Electronic submission

UPC\AC Renewable Australia Submission to the AEMC rule change ERC0280 – Integrating energy storage systems into the NEM

UPC\AC Renewables Australia (“UPC”) is an Australian entity, established in early 2017, that is headquartered in Tasmania. We have a development portfolio of several GW of renewable energy projects within the National Electricity Market (NEM). UPC is part of the global UPC Renewables Group that was established in the early 1990s. The UPC Renewables Group has developed, owned and operated over 4,500MW of large scale wind and solar farms in 10 countries across Europe, North America and Australia-Asia, with an investment value of over \$5 billion USD. We have always been a pioneering renewable energy developer, developing the first commercial wind farms in Italy and Indonesia as an example. Our mission is to meet our world’s growing energy needs with clean electricity and improve the lives of local people and communities.

In Australia we are developing projects throughout the NEM in four out of the five regions. All the current projects expect to include battery storage or are a pumped hydro energy storage system. This expectation is driven by UPC view that storage will play an integral role in transitioning the current NEM to a system with a greater penetration of renewable energy sources like solar and wind.

In our current developments and consideration in terms of battery storage, UPC have already experienced issues in terms of integrating with our renewable energy projects and hence see it as vital that there is change to how energy storage is implemented in the NEM.

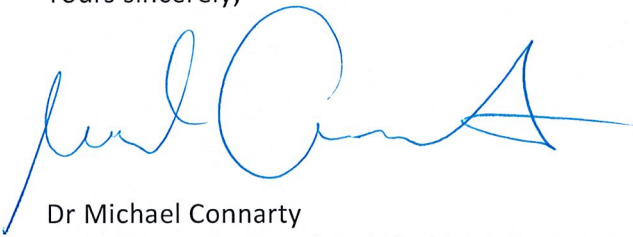
Overall, we support the rule change, but believe it should be extended to allow true hybrid plants behind a single DUID. The rule change should be approved and implemented as quickly as possible. In terms of the scope of the rule change, the definition of Bi-Directional Unit should include hybrid connections and allow hybrid DUID, not just stand alone batteries. This will help for a better integration

of energy storage and renewable projects in the NEM, which should drive a more effect development of renewables into the future. UPC consider the timing of the rule change should occur as quickly as possible BUT we would encourage the AEMC to consider the extension of the definition to include hybrid DUID.

UPC have provided a response to some of the questions set out in the consultation paper and they are attached for your consideration.

If you would like to discuss any of the comments in this submission further then please contact myself at Michael.connarty@upc-ac.com or 0407 368 174.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Michael Connarty', with a stylized flourish at the end.

Dr Michael Connarty
Manager Strategy and Stakeholder Engagement
UPC\AC Renewables Australia

Responses

Question 2

1. Yes, we agree with AEMO. Energy Storage and Hybrid facilities are not contemplated in the NER and therefore AEMO and other NSP processes, which are defined by the NER, are not fit for purpose and create barriers to entry. We agree with most of the concerns listed by AEMO but would also add:
 - a. The application of "interim" regulations and guidelines that are entirely defined by AEMO not the NER,
 - b. Inconsistency in the application of these regulations - for example the droop curves that determine the MW limits that can be registered for various FCAS varies across BESS facilities for no clear reason.
 - c. The current rules do not allow the pairing of different technology, such as solar power and BESS, behind a single point of connection to operate and be dispatched as a single hybrid entity. This arrangement would allow and incentivise the smoothing of renewable generation at the point of connection as currently generators and BESS are metered and dispatched independently and are so only incentivised to maximise their own profit regardless of the net impact of their behaviour on the network. The best example of this is a BESS smoothing a solar farm's output to more closely match its 5 minute dispatch trajectory, reducing its causer pays liability and improving stability in the network. This is not currently possible if the BESS is greater than 5MW, and is not possible under AEMO's proposed rule change.
2. No, see examples above. The proposed "bi-directional resource facility does not solve the concerns listed above. We believe this rule change must include the ability for a true hybrid generator to register and operate as a single entity/DUID in the NEM.

Question 3

Yes, we agree energy storage and hybrid facilities will play a significant role in the future market.

Yes we agree the concerns raised by AEMO, as well as those we have raised in our response to Question 2 will become even worse over time. Interim regulations and guidelines introduced by AEMO but with no grounding in the NER will change over time at the whim of AEMO leading to arbitrary limitations on the performance and operational capability of otherwise identical BESS.

In addition, AEMO has stated that as more and more renewable generators are added to the NEM more FCAS will be required to maintain system stability and security. So far, this has been addressed by rule changes such as the Primary Frequency Response and AEMO increasing its minimum FCAS procurement, but both of these address the symptom and not the cause. We believe the NEM should have a structure that allows generators to smooth their output, reducing the requirement for balancing services like FCAS and PFR. The Causer Pays mechanism does not achieve this due to the time delay between output and the calculation of CP liability, and this cannot be done with separate DUID.

Question 4

1. Yes, we agree with AEMO that there is a strong rational for defining storage and hybrid facilities. Our reasons are detailed in our response to Question 2 and 3.
2. Yes, please consider the hybrid DUID compared to separately registered generators and loads.

Question 6

1. We strongly disagree with waiting for the two-sided market reforms as the timeline for these reforms is too far in the future and it is not clear they will resolve the issues raised by AEMO and other stakeholders.
2. We disagree with considering this rule change as an interim step - it should be considered as a stand alone rule change to fix a flaw in the NER.
3. We support investigating the combining of different types of market participants and imposing obligations based on services rather than assets, as long as it does not delay the implementation of this rule.
4. The alternative approach we propose is to extend the definition of Bi-Directional Unit to allow a hybrid of renewable generators and BESS behind a single DUID.

Question 7

1. The reasons we have designed all our wind and solar projects to be combined with battery energy storage :
 - a. Optimising connection assets - a wind or solar generator does not utilise the connection assets at 100% of their availability. Combining technologies allows greater utilisation and therefore a more economically efficient outcome.
 - b. Capturing curtailed energy - this is not currently possible, but a single hybrid DUID would allow this
 - c. Advanced BESS inverters can provide system strength services as an alternative to synchronous condensers - providing more stable connections
2. Yes. We cannot limit causer pays by using batteries without the ability to register as a single hybrid DUID. The best we can achieve is a natural financial hedge between a BESS and renewable generator, but this in no way reduces the contribution of the generator to the REG FCAS AEMO must procure to manage system frequency.
3. Combine technologies behind a single connection point.
4. Yes. Challenges are uncertainty around the requirements of scheduled generators and the inconsistent application of consequences for not behaving as expected.
5. Yes. Without clarity and adequate representation in the rules, AEMO is left to introduce interim guidelines and arrangements that change over time and deliver inconsistent outcomes.

Question 8

1. NA.
2. Yes.
3. Yes. AEMO's guides are effectively "work-arounds" and are not fit for purpose.
4. Yes.
5. Yes, the ability to register as single hybrid DUID is not contemplated.

Question 10.

1. We believe AEMO's approach is an improvement but does not go far enough as we believe a hybrid DUID should be permitted.
2. Absolutely not. Registration of hybrid facilities should be permitted under the NER.

Question 12

1. NA.
2. No grandfathering should occur. AEMO has applied interim arrangements for energy storage facilities - by their very nature these are not intended to apply indefinitely.

Question 14

1. A single hybrid DUID.

Question 15

1. The addition of the option to register as a single hybrid DUID would improve this rule change.

Question 20

1. Yes, the current rules are unclear and have been cobbled together based on the whatever the most-recent application AEMO has process rather than a well-considered rule designed to be technology neutral and achieve NER goals. Yes, the current rules do not permit true hybrid facilities. We have seen no evidence that AEMO requires more visibility of assets behind a connection point than they have already.
2. Yes, we agree with AEMO's proposed approach.

Question 24

1. Yes we agree there is inconsistency and ambiguity in TUOS and DUOS.
2. Yes, it creates an uneven playing field and perversely penalises BESS from being constructed in areas they could be useful.
3. There are no pros to allow NSP discretion. Yes, the approach and method should be harmonised.
4. Yes.