9 August 2012

Ms Anita Lai
Australian Energy Markets Commission
PO Box A2449
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Submission by email: www.aemc.gov.au

Dear Ms Lai

ERC0147 – Connecting Embedded Generators

Origin Energy (Origin) welcomes the opportunity to provide the Australian Energy Market Commission (AEMC) with comments on the Rule change proposal on connecting embedded generators from Climate Works, Seed Advisory and the Property Council of Australia ("the proponents").

Origin is particularly interested in this Rule change proposal from the perspective of its distributed generation business, Cogent Energy. Cogent specialises in the development of low-carbon and efficient tri-generation in commercial buildings and precincts with projects in major capital cities across Australia. This includes the City of Sydney project installing 477MW of tri-generation across four low-carbon zones around Sydney delivering a 24-32 per cent reduction in greenhouse gas emissions.

We support the proponents' view that the existing connections process set out in the National Electricity Rules (NER) makes challenging the uptake of efficient levels of embedded generation. We agree that reviewing and improving the connection process for embedded generation could go a significant way to addressing these challenges. In fact, many of the issues identified in the Rule change proposal are consistent with concerns that Origin and other market participants have raised around large scale (greater than 30MW) connections. The AEMC is currently considering options to address these connection framework challenges in its Transmission Frameworks Review (AEMC TFR).

The NER connections framework needs to recognise there are differences between connecting large scale, micro and embedded generators to NEM networks. Prescribing an abridged connections process for embedded generators in Chapter 5 can address the issues unique to embedded generation connections while continuing to provide larger scale transmission connections their robust process. Separating the connection requirements for embedded generators from other large scale generation provides an opportunity for the AEMC to consider its broader reforms in the TFR in parallel to this Rule change proposal. There is already precedent in the NER for establishing separate connection processes as required by technology; Chapter 5A focuses on connections relating to micro generation, which is distinct from both large scale generation and distributed generation. Both connecting proponents and distribution network service providers can benefit from streamlining the process.

While Origin broadly supports the recommended solutions, we are concerned by the broader implications of any amendments to Chapter 5. In particular, the AEMC needs to be conscious that amending the connections framework to address an embedded generation concern does not unintentionally give rise to a problem for large scale connections.

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Existing challenges with the connection process for small generators

The NER currently does not include a framework that facilitates the effective connection of embedded generators. Currently, the NER includes two chapters related to connections: Chapter 5 covers connections to the distribution and transmission networks; while Chapter 5A focuses on micro generation connections.[1] Neither of these processes is equipped to support the timely connection of embedded generation.

The proponents have accurately captured the challenges of the current connections process for embedded generators as set out in NER Chapter 5. These include:

- regulatory requirements imposed at the national and state jurisdictional level;
- connection enquiry and application timelines;
- information requirements;
- technical requirements;
- costs of connection; and
- terms of connection.

In addition, many of these issues are consistent with the concerns raised by market participants in the context of the AEMC's TFR.

One of the major challenges for the connections framework is balancing the obligations of Network Service Providers (NSPs) for the safe, secure and reliable supply of electricity with the commercial timeframes and expectations of connection applicants. Calibrating the connections framework to provide flexibility in determining what technical requirements are most relevant to the generator and distribution network can assist in facilitating efficient commercial outcomes. This type of framework is likely to promote the National Electricity Objective (NEO).

Proposed solution

In the context of the AEMC TFR, Origin supports a connections process that delivers consistent, transparent and predictable large scale connection solutions across the NEM. The same objective applies equally to an embedded generation connection framework. Addressing many of the issues identified by the proponents will go a substantive way to provide that certainty.

Origin considers the NER needs a connections framework that recognises the unique features of embedded generation connections. At one end of the solutions spectrum, the AEMC could prepare a separate NER Chapter dedicated to embedded generation connections, similar to Chapter 5A in the context of micro generation connections. Alternatively, the technical requirements in Chapter 5 and its supporting Schedules could separate the process and standards applicable for embedded generators.

Relevant technical requirements

Reducing the complexity of the connections process is critical to reducing the time of the connections process. Some of this complexity arises due to the level of discretion provided to the NSP in determining the applicable information and technical

[1] Chapter 5A commenced on 1 July 2012 as part of the National Electricity Consumer Framework. Note that these provisions only apply in Tasmania and the ACT as these are the only jurisdictions that have adopted the National Energy Consumer Framework as at 7 August 2012.

requirements of a connection. To reduce the complexity of a connection negotiation, Origin suggests:

- limiting the technical requirements for embedded generation connections to those outlined in Schedule 5.2.3 "Technical matters to be considered"; and
- promoting a connection process that coordinates discussions between the connection applicant and NSP for setting a negotiated access standard in good faith.

Many aspects considered under Schedule 5.2 pertain to technical issues and performance standards within the high voltage transmission network. Large scale connections are likely to have a broader impact on system security. Embedded generators, on the other hand, are less likely to have a "whole-of-system" impact; they are more likely to have a localised network impact. This suggests that an assessment by the NEM system operator, the Australian Energy Market Operator (AEMO), is unnecessary for assessing embedded generation connections. The connection process for these generators should therefore account for that reality.

At the same time, it is important for a Distribution NSP (DNSP) to have access to sufficient information to meet its statutory obligations to maintain the safe, secure and reliable supply of electricity. There is an important balance between facilitating the timely connection of embedded generation while maintaining the NSP's statutory obligations. As an example, imposing a strict time period for processing connection applications may restrict the due consideration of technical requirements, particularly those relating to the quality of transfer capability. There is also a careful balance, between requiring too much or not enough information. At the moment, the current Rules require – at times - a prohibitive quantum of information for embedded generation connections, which can greatly prolong the connection process. We would welcome discussions with the AEMC and DSNPs to workshop what information is most relevant as a way of improving the timeliness and efficiency of connection negotiations.

We note the AEMC is also currently reviewing the distribution network planning and expansion framework. We consider there are efficiencies that can be gained in a connections regime that incorporates regionally consistent benchmarking of distribution network standards. Origin has separately provided comments to that review.

Connection standards – automatic and negotiated

The concept of an automatic standard may be a good idea in principle, but may have limited value in practice. The automatic connection standard for large scale generation is set at a sufficiently high level to minimise the risk of adverse outcomes resulting from a connection to anywhere on the network. As such, Origin is not aware of a connection agreement that uses the automatic standard; the costs to meet that standard are prohibitively high.

At the very least, an automatic standard could set a "maximum technical standard", which could assist in setting parameters for connection negotiations. This could be beneficial, even if the automatic standard is not used. However, given the nature of embedded generation connections differ from large scale, it could be that an automatic standard could provide more value for those connecting parties.

The process for negotiating a connection standard is one of the more time consuming elements of a connection application. This is the case for all types of connection agreements, both embedded generation and large scale. The current arrangements include an advisor role for AEMO. However, as stated above, it may be constructive to

remove AEMO from the negotiation framework as it applies to embedded generation connections. This seems pertinent as AEMO has acknowledged, through its work on developing a small generator framework (see below), small generation connections are unlikely to pose a threat to power system security. This can then give way to develop a robust bilateral negotiation framework for small generators between the connection applicant and the DNSP.

AEMO does, however, have an important role in maintaining the power system in a satisfactory operating state. As the penetration of decentralised generation increases, AEMO will have an important role in monitoring and reviewing the impact of such generation on overall network and system performance.

Better network information can improve efficiency of connection process

Availability of information on network capacity and capability can help inform embedded generation connection decisions. It can also help set expectations around the complexity of a prospective connection application. For example, if a prospective applicant is aware of a pending fault issue in a section of the distribution network that it is considering connecting to, that applicant can manage expectations for its business counterparties as well as providing a more realistic estimate for negotiating a connection agreement. Access to better network information can improve the quality of connection enquiries and assist in the connecting parties in developing their business propositions.

We note this issue is being considered concurrently through the AEMC's Distribution Network Planning and Expansion Framework. The publication of emerging network constraints and local network fault levels would be a key element for expediting the connections process for embedded generators.

Managing any unintended consequences of Rule change proposal

The proponents' rule change proposal seeks to address the frameworks gap between Chapter 5 and 5A for small generators. While we support filling this gap, it is important that any proposed amendments do not inadvertently impede the connection process for large scale connections.

For example, one of the proposed changes is to conclude negotiations around access standards within 65 business days. We understand this timeframe could apply to all connection negotiations, not just those related to embedded generators. While there may also be issues with negotiating access standards for a distribution connection in that timeframe, the complexity of a transmission connection makes this proposition untenable. We caution the AEMC to consider carefully any universal changes to Chapter 5 to manage the risk of a change having unintended consequences.

NER definitions: are embedded generators also small generators?

There is a question as to whether introducing a definition for "embedded generation" is necessary. AEMO has developed a Small Generator Framework Design for units to be exempt from registration, currently defined as being below 5MW or eligible to apply for an exemption from registration for units between 5MW and 30MW but exporting less than 20GWh per year to the grid. These units are eligible for exemption from registration as they are deemed to present a lower risk to power system security.

The proponents have advanced the proposal to increase the uptake of embedded generation, including co-generation and tri-generation units, principally located in commercial buildings and precincts. These units are typically below 5MW in size and, as the business model is premised on the electricity generated to be consumed at the connection point, only a residual amount of electricity below 20GWh is exported to the grid each year. On this basis, when discussing embedded generation, it appears that these generators may already be captured in AEMO's Small Generator Framework Design – "embedded generators" appear to be "small generators".

The Commonwealth Government, AEMC and AEMO have conducted several reviews to help facilitate investment in cost effective small, embedded and low-carbon generation technologies. These have included:

- The Discussion Paper on Impediments to the Uptake of Renewable and Distributed Generation, MCE Standing Committee of Officials, 2006
- Review of Energy Market in light of Climate Change Policy, AEMC, 2009
- Small Generator Aggregator Framework, initiated with the AEMC, December 2011
- Small Generator Framework Design, AEMO August 2010

Power system security and reliability and information provision was a main category to be considered by AEMO in the small generator framework design. Through consultation with stakeholders, including its own Power System Operations department, AEMO concluded that power system security and reliability would not be adversely affected by an increase in participation. AEMO established the guidelines for small generators noted above. It may be that embedded generators can leverage off the existing small generator framework already undertaken, leaving this Rule change to focus on improving the connection framework for small generators as a whole.

Further information

Origin would welcome the opportunity to discuss Cogent's connection experience to date, if that would be of value to the AEMC. If you have any questions or would like to discuss this submission further, please contact Hannah Heath (Manager, Regulatory Policy) on (02) 9503 5500 or hannah.heath@originenergy.com.au.

Yours sincerely,

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