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John Pierce
Chairman
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235
Lodged Electronically

Dear Mr Pierce,

RE: ERC0147 Connecting Embedded Generation Rule Change Consultation

The Clean Energy Council (CEC) welcomes open and frank discussion on the current connection process as it is applied to embedded generators. While the CEC agrees that the connection process is often cumbersome and inefficient the CEC's view is that many of the issues presented can be better managed with enhanced levels of information transparency.

The CEC is the peak body representing Australia's clean energy and energy efficiency industries. Its priorities are to:

- create the optimal conditions in Australia to stimulate investment in the development and deployment of world's best clean energy technologies
- develop effective legislation and regulation to improve energy efficiency
- work to reduce costs and remove all other barriers to accessing clean energy

The CEC works with over 550 member organisations and the government to identify and address the barriers to efficient industry development in the energy efficiency and stationary energy sector. The clean energy industry contributes to the generation of electricity using wind, hydro, solar, biomass, geothermal and marine energy as well as the emerging technologies and service providers in the energy efficiency sector including solar hot water and cogeneration.

The current frameworks and practices applied to embedded generator connections are rapidly losing context in respect of the growing interest in commercial scale embedded generation. In particular the boom in domestic solar photovoltaic (PV) generation has far exceeded expectations while driving the cost of solar PV down and developing a highly capable workforce that can be readily engaged to deploy commercial scale solar installations. In conjunction the push for energy efficiency is driving up interest in co- and tri-generation systems in commercial buildings and industrial processes. These factors are now placing significant pressures on the connection processes as applied by many Distribution Network Service Providers (DNSPs).

The CEC's firm view is that embedded generator connections can no longer be considered a practice to be undertaken in a bespoke fashion. They are rapidly becoming a day to day activity of DNSPs and the rules need to evolve urgently to maintain pace and remove the clear barriers presented by current practices. The National Electricity Rules (NER) is the correct place for this evolution to occur

as the retention of the currently fragmented jurisdictional approaches hinders the advancement of the intended *national* market.

The CEC is very supportive of reform to the rules to remove barriers to clean distributed and embedded generation developments. However, there are some aspects of the proposed rule change which require further consideration in light of perceived benefits. As some of the proposed changes are already incorporated into the NER to some extent, it is unclear where the perceived benefit will be derived. The CEC's view is that more significant reform to the rules is required to unify the embedded generator connection process across DNSPs and subsequently derive efficiencies.

The following sections outline the CEC's views in more detail.

1.1 Connection Process

The CEC believes that the current arrangements for connection of generators under Chapter 5 are well formed for the treatment of registered generators. However, Chapter 5 was never intended to fully manage the connection of non-registered generators¹, which are usually also *embedded generators* due to their location and capacity².

In order to clarify the intent of Chapter 5 it is important to recognise the definitions of both embedded generation and distribution networks. An 'embedded generator unit' is defined in the NER as being a generator "*connected within a distribution network and not having direct access to the transmission network*"³. The rules also clearly recognise that a distribution network⁴ is one which is not a transmission network. In the NEM both transmission and distribution voltages are diverse and can cross over (e.g. in New South Wales 132 kV lines can be distribution or transmission depending on ownership).

Either a DNSP or a TNSP can connect the types of registered generators contemplated by NER Chapter 5 and network function or ownership determines if the generator is 'embedded'. While only a DNSP would be expected to connect a non-registered generator as the connection costs associated with higher voltage transmission networks create an inherent barrier.

Chapter 5 manages the diversity in network assets across TNSPs and DNSPs separately through clauses 5.4A and 5.5. Both clauses reference other parts of Chapter 5, namely clauses 5.3.3 and 5.3.5, which in turn reference access standards and information provision as required for the connection of registered generators. The lack of detailed consideration of non-registered embedded generation in Chapter 5 means that although a connection applicant in this category can invoke clause 5.1.2(b) to request that the Chapter 5 process be followed, much of it is difficult to translate directly to non-registered embedded generator connections. As distribution networks usually have different characteristics to transmission networks and a lesser impact on system security, many of the NER Schedule 5.2 access standards are not applicable.

¹ AEMO, 2010, *AEMO Generator Registration Guide*, p. 18., available: www.aemo.com.au.

² Aside from non-registered generators with nameplate ratings above 5 MW and less than 30 MW and exporting less than 20 GWh p.a. the vast majority of embedded generators will be connected into distribution networks.

³ AEMC, 2012, *National Electricity Rules Version 50*, p. 996, www.aemc.gov.au.

⁴ *Ibid*, p. 990.

The CEC's view is that this lack of clarity in Chapter 5 has led to many DNSPs applying a connection process consisting of parts of Chapter 5 (e.g. the connection enquiry and response as per clause 5.3.2) and other in-house processes⁵. In conjunction some state-based legislative instruments also direct DNSP processes⁶ and technical access standards. As a result there is significant diversity in the processes applied by DNSPs and this diversity creates uncertainty for prospective connection applicants.

As discussed above the CEC agrees with the proponents that the connection process for non-registered embedded generators is under-prescribed, and that the process as applied by DNSPs today can lead to significant confusion and risk for connection applicants. However, incremental changes of the nature proposed by the proponents will not necessarily result in the expected removal of barriers which currently exist to the entry of new non-registered embedded generation.

The CEC believes that the current structure of Chapter 5 should be refined with the intent to connect registered generators, or other registered participants, rather than expanded in scope to better manage non-registered embedded generation. The technical requirements for connection for non-registered embedded generation can be clearly distinguished from those prescribed for registered generators as intended by Chapter 5 and the rules should continue to recognise this.

Chapter 5A was developed with the intention to manage the connection of non-registered embedded generation and this is the area where proposed changes to this process should focus⁷. Despite this the CEC recognises that Chapter 5A also requires significant reform to better align to the current Chapter 5 process. This is not the subject of the current consultation however.

Question 1 Complying with Chapter 5

As discussed above the CEC's view is that there are inherent barriers in the design of Chapter 5 that prevent it from being fully applicable to non-registered embedded generator connections. Therefore, while a connection applicant's right to require a DNSP to follow the Chapter 5 connection process exists, it does not necessarily provide any significant benefit to a proponent who may invoke it.

Question 2 Good faith provisions

The provisions of good faith alone are insufficient to have a material impact on the connection process. While necessary, and defined in a legal context, this simple statement has no material significance when it is insufficiently supported. When other clauses relating to the provision of information, technical standards or process timing are not sufficiently prescriptive 'good faith' will only apply to the extent of the scope of these rules and thus will remain open to interpretation.

The fact that some connection applicants feel that the provisions of good faith have not been applied indicates that the supporting rules insufficiently prescribe the connection process, rather than that the provision of good faith is being ignored.

⁵ The process outlined in the Energy Networks Association's *Guideline for the preparation of documentation for connection of Embedded Generation within Distribution Networks* is one example.

⁶ e.g. the Essential Service Commission of Victoria prescribes some connection practices through a DNSP's licence conditions and Electricity Industry Guideline 15.

⁷ The CEC also notes that this aligns with the Commission's view as expressed in the Draft Determination on the Distribution Network Planning and Expansion Frameworks.

Question 3 Publishing details of information requirements

The CEC's view is that information asymmetry is the greatest barrier to embedded generation developments. Therefore, any proposal to enhance access to information by connection applicants will bring material benefit.

The connection process applied by DNSPs should be consistent across different jurisdictions. As too should the requirements for information disclosure by DNSPs. However, the current NER provisions do not treat information provision for non-registered embedded generators with the same level of prescription as that for registered generators complying with NER schedule S5.2.

The current requirements for information disclosure are insufficient without detailed prescription of the information required to be provided to the connection applicant and to the DNSP. Enhancement of the general provisions for information disclosure will also enhance the process in light of the NEO.

Question 4 Response to connection enquiries

The CEC's experience is that in some instances connection applicants have been asked to re-submit information which a DNSP may have already been provided with. However, this is not a connection enquiry response issue. Rather it is an issue which is generally recognised to occur towards the end of the period agreed to in the 'preliminary program' for the provision of the connection offer.

Once a DNSP requests additional information a new date can be set in the preliminary program. This creates the opportunity for agreed deadlines to be pushed back indefinitely if the relevant assessment cannot be made in a timely manner for some other reason.

The CEC's view is that the response times and content of all responses from DNSPs and information provided by connection applicants needs to be prescribed in more detail. For example the connection enquiry response should be complete in content and provide all necessary information required to develop a complete connection application.

The CEC also considers that the Demand Side Engagement Strategy as proposed by the Distribution Planning and Expansion Framework Rule Change will provide a helpful resource for embedded generation proponents. However, further reform is required to ensure that the connection negotiation framework is made more effective by being more effectively supported.

Question 5 Information to be included in offers to connect

The CEC's experience is that connection costs are often provided in single line breakdowns and are often non-negotiable. Without clearly defined information provision requirements on all matters relevant to the development of the connection in the applicable rules it is not possible for a proponent to identify opportunities to negotiate, or to take action to reduce costs and connect efficiently. Some examples include a clearly defined and coherent connection process, clear and consistent technical access standards and defined technical information provision.

Question 6 Setting out the time to connect in the preliminary program & Question 7 Providing an offer to connect within 65 business days

The CEC's view is that the current arrangements for a preliminary program are insufficient. Further, delays in the connection process create significant costs for generation proponents to the extent that they can be detrimental to the project.

Getting a connection enquiry to the connection offer stage takes a significant effort and can coincide with the ongoing development of the generation project parameters, or changes to the relevant network. The expectation that a DNSP or TNSP can estimate and be held to a detailed preliminary program in the response to the connection inquiry is unreasonable. For this reason many DNSPs and TNSPs will usually respond to this requirement with a simple *estimate* of the number of months expected to provide the offer.

The factors which affect this timeline are numerous and are not always visible to the NSP, or the connection applicant in the initial stages of the connection. The best way to manage this uncertainty is to ensure that a connection application is supported by clear requirements for its content, and all of the necessary information is provided to the connection applicant prior to the development and lodging of the connection application. The connection enquiry response should detail all of the required information to support the development of a complete connection application.

This approach would provide better confidence in connection timing and place the responsibility of process timing onto those which are best placed to manage it. Once these provisions are in place and demonstrated to be effectively working the timeline for processing the connection application could be fixed with some certainty. Thus uncertainty for both parties would be reduced and new connections would be managed more efficiently.

Question 8 Terms and conditions of connection

The variation of both the technical and legal requirements between different jurisdictions and DNSPs creates significant uncertainty for proponents. From a generator perspective the justification for this variation is unclear as it would appear to be a simple matter of the expectations from each DNSP.

The CEC expects that while consistency across jurisdictions may be an improvement to the current process, disclosure of the terms and conditions at an early stage would be an even better means of enabling the connection applicant to manage any risks which may arise.

The relevant DNSP submissions to this consultation may provide more insight into the differences between jurisdictions.

1.2 Technical standards

As intended by design NER Chapter 5 already outlines detailed technical standards for the connection of *registered* generators. It also provides detailed requirements for the information content to be provided to connection applicants to demonstrate generator performance against these standards, as follows.

NER clause 5.3.3(b1) outlines that in the response to a connection enquiry the NSP must

“provide the Connection Applicant with the following written details of each technical requirement relevant to the proposed plant:

- (3) the automatic access standards;*
- (4) the minimum access standards;*
- (5) the applicable plant standards;*
- (6) the negotiated access standards that will require AEMO’s involvement in accordance with clause 5.3.4A(c); and*
- (7) the normal voltage level, if that is to change from the nominal voltage level.”⁸*

NER clauses 5.3.2(f) and 5.3.3(c) provide for the provision of all necessary technical information held by the NSP including

“to the extent that it holds technical information necessary to facilitate the processing of a connection enquiry made in accordance with paragraph (a) or an application to connect in accordance with clause 5.3.4(a), provide that information to the Connection Applicant in accordance with the relevant requirements of schedule 5.1, 5.2, 5.3 or 5.3a.”⁹

NER clauses 5.4A(c)(2) and 5.5(c)(2) both require an NSP to

“provide to the Connection Applicant such information as is reasonably requested to allow the Connection Applicant to fully assess the commercial significance of the ... network user access arrangements sought by the Connection Applicant and offered by the [NSP].”¹⁰

NER schedule S5.2.4(e1) then prescribes exactly the technical information to be provided to the connection applicant to assess the performance of the generator against the Schedule S5.2 performance standards.

The process described above is complete in that it facilitates both the requirements for the technical access standards and the information to be provided to support the generator performance against them. These two components are required to achieve the desired outcome of demonstrated generator performance which underpins a connection agreement – one cannot be achieved without the other.

When considering the specific application of the process described above to the connection of non-registered embedded generators some immediate barriers are identifiable:

- (1) The schedule S5.2.5 automatic, minimum and negotiated access standards are irrelevant in most cases. For example S5.2.5.2 requires the NSP to allocate power quality limits, usually determined from recorded data, while distribution networks do not usually incorporate such recording data. Rather, emission limits are determined by the relevant Australian Standard.
- (2) Distribution networks operate with characteristics that are sometimes unique to jurisdictions or even to different DNSPs.

⁸ AEMC, 2012, *National Electricity Rules Version 50*, p. 380, www.aemc.gov.au.

⁹ *ibid*, p. 378.

¹⁰ *Ibid*, p. 395 & p. 398.

- (3) Much of the information to be provided under NER schedule S5.2.4(e1) is relevant to transmission and sub-transmission networks, rather than distribution networks.

The above points lead to the conclusions that firstly, DNSPs must be responsible for determining the technical standards relevant to their network and secondly, that DNSPs must provide the relevant technical information to the connection applicant. In conjunction DNSPs must also provide all relevant technical data to “*fully assess the commercial significance*” of the connection in the development of the connection application. Yet the content of the information to be provided is open to the DNSP’s discretion as applied in the individual connection process.

In practice DNSPs do not always provide the required level of information or outline technical access standards for the connection applicant. In some cases the preference is to assess the generator performance internally without transparency. However, this approach assumes that the connection applicant has decided on the ultimate plant design and characteristics and is therefore willing to accept the connection solution offered by the DNSP irrespective of cost.

As noted by the Commission DNSPs have strong incentives to maintain their networks and weak incentives to connect generation efficiently¹¹. As a result this general approach does not facilitate efficient connection options, or enable the development of innovative and integrated connection solutions which meet all necessary technical standards. Therefore it cannot provide for efficient connections or enable the connection applicant to make informed and timely investment decisions.

Question 9 Technical standards for embedded generators

The CEC’s view is that there is an urgent need for the rules to align the connection process for non-registered embedded generation with that of registered generation. As discussed above the logical place for this change will be in Chapter 5A, which should prescribe

- (1) that DNSPs must determine and develop a set of technical access standards for the connection of non-registered embedded generation into their individual networks, which is then to be provided in the connection enquiry response, and;
- (2) the necessary technical data to be provided to the connection applicant in order to display performance against the DNSP’s technical access standards, which will then underpin an efficiently developed connection application and, ultimately, efficient physical connection.

1.3 Right to export to the grid

The CEC’s view on this matter is not that the right to export does not exist, rather that there has been a lack of transparency in the processes under which DNSPs have determined that it is appropriate to refuse a connection application.

¹¹ AEMC 2011, *Inclusion of Embedded Generation Research into Demand Management Incentive Scheme, Rule Determination*, 22 December 2011, Sydney, available: www.aemc.gov.au.

Question 10 Embedded generators having an automatic right to export to the grid

In general, and especially with regards to generation located in central business districts, fault level concerns would be the main driver for this refusal. In many central business districts fault level issues are present and real and their removal can require significant costs above those which most non-registered embedded generators are capable of accepting. However, the continued refusal for the connection of new generation is hard to justify under the conditions that loads such as motors and other devices which also contribute incrementally to fault level are continually added to the system.

As discussed above, transparency is required in order to identify the issues and properly inform connection applicants to make efficient decisions. Without transparency the refusal of export capability cannot continue to be appropriately justified.

1.4 Connection fees and charges

Question 11 Allowing distributors to charge an optional fee for service

As discussed above DNSPs see strong incentives to manage their regulatory obligations and weak incentives to connect generation efficiently. There is currently nothing preventing a DNSP from charging a fee to a connection applicant in order to cooperate more effectively to achieve the applicant's objectives. However, the regulatory obligations for supply reliability and safety will always prevail and DNSPs may not have the resources to provide consulting services, even if a reasonable fee structure is in place. On this basis it is not clear that the perceived benefits of this change will be easily realised.

Please do not hesitate to contact the undersigned for any queries regarding this submission.

Yours sincerely,



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