9 August 2012

Mr Steven Graham
Chief Executive
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Mr Graham

RE: AEMC Consultation Paper – National Electricity Amendment (Connecting Embedded Generators) Rule 2012

Thank you for the opportunity to comment on the rule change proposal Connecting Embedded Generators.

The Energy Network Association (ENA), the peak national body for Australia's energy networks, supports a sound regulatory framework which will allow the safe, commercial development of embedded generation. ENA members would welcome reforms to improve the processes for connecting embedded generation, consistent with fair treatment for all customers.

Network businesses recognise the contribution which embedded generation can make to a more efficient and diverse energy supply system. ENA members are pioneering the use of embedded generation in their own networks to manage network constraints and peak demand. Wider use of gas-fired co-generation and tri-generation will benefit many ENA members. All ENA members take seriously their responsibility to provide the enabling infrastructure for embedded generation.

ENA members have already managed the connection of 1.2 gigawatts of embedded generation capacity (i.e. units with capacity greater than 100kW). If smaller systems such as residential PV with export capability are included, 1.5 gigawatts of capacity has been installed successfully in the National Electricity Market.

ENA members understand that project proponents, especially those without experience in the energy sector, can be frustrated by what they see as complicated connection processes. ENA members already provide substantial information to assist proponents. ENA members welcome some of the proposals in the rule change request which could help to clarify requirements or otherwise improve communication between networks and proponents.

For its part, ENA is working on improving the information available to proponents. In 2011, ENA commissioned a major research project from the CSIRO, subsequently released as the *Report on the Impacts and Benefits of Embedded Generation in Australian Electricity Distribution Networks.* ENA has released the *ENA Guideline for the preparation of documentation for connection of Embedded Generation within Distribution Networks, May 2011*.

ENA also notes that some of the concerns raised by the proponents are already addressed by other rule change proposals or jurisdictional rules. Distribution Annual Planning Reports and demand side engagement documents provide proponents with detailed information on connection processes. The rules already require connection offers to include information on how distribution service charges have been calculated with the flexibility to offer a range of options/charges.

At the same time, ENA members have regulatory, customer service and professional obligations to ensure that the integration of embedded generation into networks is done without compromising safety, security and reliability. Genuine technical challenges exist for networks in integrating distributed generation into what has been a system of centralised power generation and one-way energy flows.

Each connection application will have its own particular challenges, reflecting the size, location, connecting voltage and complexity of the project. These issues are best managed by open communication between the distribution business and the project proponent. Applying rigid, generic rules on all connection applications will not ease the technical challenges involved in connection.

For these reasons, ENA supports further work on nationally consistent technical standards (for embedded generation units and associated protection and control equipment) but not inflexible automatic access standards. Many ENA members have already developed access standards for their networks. As a first step, the immediate goal could be to develop common standards for each jurisdiction.

ENA does not support an automatic or unlimited 'right' to export to the grid. No other generator has such a guarantee. All connections are subject to the overriding requirement that networks must operate in a safe and reliable way. Limits on exporting energy may be necessary to protect the safe, reliable delivery of electricity to customers (e.g. power quality). Connection contracts would explain what limits may be necessary on export capacity.

ENA does not support the proposal to exempt embedded generators from contributing to the costs of network augmentation. All connecting customers (load or generation) may be required for efficiency and equity reasons to contribute to the cost of augmentation. If a distribution business carries the commercial risks and costs of removing constraints for the benefit of a customer, cost recovery from that customer is reasonable. Put another way, other customers should not be obliged to pay for removing a constraint while the customer benefiting from augmentation free-rides. ENA suggests that 6.1.4(a) should be clarified to ensure that there are no inappropriate cross-subsidies between customers.

I have attached two documents which provide more detailed responses to the issues raised in the consultation paper and the rule change request. The first paper explains the key principles underpinning ENA's views on embedded generation. The second paper responds to the questions posed in the consultation paper.

I trust that these responses confirm ENA members' commitment to offering flexible, efficient connection processes for embedded generation, consistent with their responsibilities for maintaining a safe, reliable grid for all customers.

Should the Commission require further information on any aspect of the ENA submission, Mr Mark Amos, Director (Energy Infrastructure) would be pleased to assist. Mark may be contacted on 0457 007 010.

Thank you again for the opportunity to comment.

Yours sincerely

Malcolm Roberts
CEO

Attachment 1

The ENA Objectives for embedded generation

ENA members will identify and champion technical and regulatory solutions for the safe and reliable integration of EG into electricity networks, including:

1. the provision of effective and efficient connection application processes for customers and EG generation proponents;
2. adapting networks to overcome barriers to the safe integration of EG into networks;
3. implementation of technical and other solutions to ensure
   - safety to customers, personnel working on or near networks assets and the general public;
   - protection of network equipment and other customer installations;
   - reliability and quality of supply to all customers, and
   - compliance with relevant technical standards

In pursuit of these objectives, proponents applying to connect EG sources to distribution networks will be offered connection services on equitable commercial terms based on the principle that the reasonable cost of any changes to the network solely as a result of meeting the above requirements will be borne by the proponent.

To enable the achievement of these objectives the ENA considers that:

1. the regulatory arrangements applying to EG proponents should be cost reflective, provide certainty for cost recovery and maintain the distribution network service provider (DNSP) as 'whole'.

2. users of the network should pay for connection to, and use of the network to transport energy (irrespective of the direction of energy flow).

3. regulatory mechanisms should be in place to ensure that network service providers are able to receive appropriate revenue to address the impacts on network reliability and performance related to the increased use of EG.

4. all customer connections should be treated equitably. This means that, to the extent practicable, customers wishing to connect an EG source to a network will be treated in the same way as a customer wishing to connect load.

5. policy makers must ensure that equity is maintained for all customers by ensuring that there are no cross-subsidies in the market.

Key Considerations

Safety and Technical

1. Network businesses will not compromise on employee and public safety, network security, reliability obligations or power quality in the integration of EG.

2. In having an industry wide approach, the safety requirements for each of the DNSP's cannot be compromised for any of the different classes of EG.

3. The need for network capability to maintain supply quality and reliability in the event of failure of the EG system must be recognised and reflected in all considerations and negotiations.

4. The wider installation of EG in consultation with the network operator can, in many circumstances, assist in demand management efforts to address peak demand challenges at the network level in the longer term

5. Technical issues differ depending on the size and type of EG.

6. The network protection requirements for the connection of EGs are necessary to ensure that the operation of the generating units do not:
   - Increase public health and safety risks;
   - Cause any reduction in power transfer capability of the network;
   - Cause any increased need for load shedding; and
   - Adversely affect the DNSP or other users caused by transients

Reliability and Network Performance

7. The impact of a range of commercial, regulatory and technical risks to network performance related to the increased use of EG must be managed so that networks are not penalised for linking such generation into the grid

8. It should be acknowledged that the risk profile of both non-network solutions (including EG) and supply-side solutions are not always identical, and that these may impact on DNSP's performance incentives such as STPIS.

Application and Connection Processes

9. Network service providers will continue to assist customers and other stakeholders make appropriate and good choices about their energy sources and consumption.

10. Network service providers will continue to engage with EG system proponents to achieve a greater common understanding of all parties' objectives, capabilities and constraints

11. As a single set of technical standards that would safely allow automatic connection of all embedded generators without significant investment in the distribution network does not exist (nor would be easy to develop in the short

to medium term), we believe that the negotiation process remains the most appropriate process for connection of embedded generators.

12. The ENA notes the addition of EG connection to the "demand management and embedded generation connection scheme" under Chapter 6 of the National Electricity Rules, and is supportive of this scheme.

Commercial, Regulatory& Financial

13. National access rules need to ensure that costs of embedded generator connections are fairly and equitably borne by the parties that benefit from the connections, and that all users (consuming or generating) of network assets must pay proportionally for the use of the network.

14. The regulatory frameworks applied to network operators provide a level of certainty that investments in network augmentation needed to support EG can be recovered or compensation can be assured. In this respect we believe that:
    - the regulatory arrangements should be "cost reflective" of all costs, maintain the DNSP as whole and provide certainty for cost recovery.
    - all costs incurred to manage fault levels, and to ensure adequate reliability, voltage and power quality should be recognised and be fully recovered under the regulatory arrangements.
    - the intermittent nature of some sources of energy used in EG and the consequent need to incorporate energy storage facilities to provide stability of the network and supply may incur additional unforeseen costs. Networks have had recent experiences with residential solar photo-voltaics and are keen to avoid a repeat of the negative learnings from these.

15. Current and proposed reforms, including but not restricted to:
    a. the National Energy Customer Framework(NECF),
    b. the Demand Side Participation Review Stage 3, and
    c. the Distribution Network Planning and Expansion Framework (RIT-D)

    need to be allowed to 'bed down' before a number of efforts by DNSPs to harmonise on processes and procedures can proceed with confidence and make effective progress toward expected outcomes.

16. The continuation of a regulatory approach which places non-network options, such as EG, on an equal footing with established network augmentation approaches. In doing so, a clear separation between costs and benefits between stakeholders must be maintained.

17. Consumers at large should not be expected or required to support an increased share of network cost where large consumers rely more heavily on EG to meet some or all of their basic electricity needs.

18. There are benefits for all stakeholders from increased harmonisation and streamlining where possible of safety and technical standards and other requirements, contractual arrangements, operating protocols and procedures for the connection of the smaller embedded generators across jurisdictions.

The ENA responses to the questions raised in the *National Electricity Amendment (Connecting embedded generator) Rule 2012 Consultation Paper (14 June 2012)* follow in this document and should be read in the context of the following views of a more general nature:

1. The ENA is keen to better understand the latest (and future) views of the AER on the treatment of shallow and deep investments with respect to cost recovery.

2. The harmonisation of technical principles across jurisdictions and DNSPs to the extent practicable and necessary to achieve efficiencies with respect to the ability for EG products and schemes to be connected in different parts of a network and in different networks is of interest to ENA members as we see cost benefits in such an approach.

3. The ENA encourages the development of a clear and published nationally uniform connection processes, and documentation, having regard to the different classes of EG and network characteristics, and the jurisdictional policies and legislation that apply.

4. The ENA maintains that an effective and efficient connection application process must
   i. represent a logical sequence of connection activities;
   ii. prescribe response times that are not unrealistically short;
   iii. recognise the need for consultation at the enquiry stage to identify issues associated with a proposed connection.

5. The ENA suggests that an interactive approach following the submission of a Connection Enquiry ensures that an appropriate "offer to connect" will be possible in a timely manner.

6. The ENA supports the use of network support payments to embedded generators, where the planning and Regulatory Test obligations under the Rules establish that such non-network solutions represent the most efficient means of alleviating a network constraint.

7. The ENA supports the introduction of nationally consistent basic elements of Connection Agreements for micro EG Systems under NECF.

8. In view of the impending introduction of the NECF along with other policy initiatives (such as DSP3 and RIT-D) that impact on the processes and decisions related to EG we recommend that time is needed for these to 'bed in' before a Rule Change can be considered as an appropriate means of dealing with all known and as yet unknown challenges. As we understand that other stakeholders are currently preparing applications for similar and other Rule Changes regarding EG we believe that a more coordinated approach, ideally managed by the AMEC, with a longer term view will avoid the complications that will arise from 'iterative Rule Changes' implemented over a short period time in parallel with more significant reforms such as DSP3.

Attachment 2

The Energy Networks Association's responses to the specific questions posed in the AEMC Consultation Paper – National Electricity Amendment (Connecting Embedded Generators) Rule 2012 follow:

Question	**ENA Response**
Question 1 Complying with Chapter 5 (a) Currently any person can require a network service provider to comply with Chapter 5 or elect to use the connection procedure under Chapter 5. Are there any problems or barriers to how this is applied in practice?	In the experience of ENA member businesses: • consistent with the intent of Chapter 5 of National Electricity Rules (NER), mainly large registered market generators (i.e. 30MW) have sought connection to the distribution network in accordance with clause 5.3 of the Rules; and • most non-registered generators (less than 5MW) and generators between 5MW and 30MW rely on the jurisdictional connection arrangements or may seek connection under NER Chapter 5. • the connection process of Chapter 5 is not usually followed or chosen by Customer's as it is not particularly user-friendly and is aimed at customers who already have a deep understanding of their project and potential impacts. In one member's opinion, projects that are worked through in a collaborative approach between the DNSP and the proponent before any formal applications are made achieve the best outcomes. In considering this Question the ENA notes that: • Clause 5.1.2 (b) of the NER states "Any person who is not a *Registered Participant* may agree with a *Network Service Provider* to comply with this Chapter as part of a *connection agreement*." Additionally, clause 5.3.1 (c) states "Any person wishing to establish a *connection* to a *network* may elect to follow the procedures in this rule 5.3." The ENA suggests that this is reasonable but, despite this, the rule change proponents are seeking amendments to clause 5.1.3(b) to ensure that an embedded generator can require a DNSP to comply with the NER. This new clause entrenches a right on the part of embedded generators (including cogeneration proponents) to require a network service provided to comply with Chapter 5. The ENA notes that DNSPs are already required to comply with Chapter 5 of the Rules, and therefore does not consider the rule change to be beneficial. However, in the event that the rule change is considered to have merit we note that this could inappropriately include TNSPs. • any person can elect to use the connection procedure set out in Rule 5.3, including Non-Registered Embedded Generators. ENA members follow the procedures in Rule 5.3 for Registered Participants, and use Rule 5.3 to guide the connection process for small and medium embedded generators. • Rule 5.3.2 (d) allows the Connection Applicant to request that the DNSP must process a connection enquiry and the DNSP must meet this request. With the information exchanged between the two parties it is a matter for the Connection applicant to make the decision whether to proceed with the connection application. In ENA's view, the current rules do not present any barriers to embedded generators from requiring a network

	service provider to comply with Chapter 5, but we have no objections to the proposed amendment that gives recognition of embedded generator's right in clause 5.3.2 of the NER as this is consistent with good regulatory practice. Further, the ENA recognises that NER Chapter 5 is a comprehensive, large chapter. If the Chapter were open for more extensive rule changes, the ENA would welcome the opportunity to discuss further improvements with the AEMC to assist in a more streamlined approach.
(b) If so, what are the problems and/or barriers? What are the costs and impacts on stakeholders?	In ENA members' experience, Non-Registered Embedded Generators rarely seek agreement regarding compliance with Chapter 5 under clause 5.2.1. In many cases it is apparent that these prospective customers are unaware of Chapter 5 of the Rules.
(c) How would the proposed amendment to specify that an embedded generator has the right to require a network service provider to comply with Chapter 5 resolve these problems and/or barriers?	The ENA maintains that, consistent with good regulatory practice including transparency and consistency, any changes to the Chapter 5 should take effect from the commencement of the next regulatory control period. Also, the ENA suggests that providing an EG proponent with a right to force a DNSP to comply with Chapter 5 including any automatic access standards will only achieve mutually beneficial outcomes for all stakeholders if the EG proponent is sufficiently informed to understand Chapter 5.
(d) Given that any person can elect to use the connection process under Chapter 5, when, and why, do non-registered embedded generators choose not to use this process?	In ENA members' experience, non-registered embedded generators are often unfamiliar with the provisions of electricity legislation, including Chapter 5 of the NER.
Question 2 Good faith provisions (a) The current NER sets out that network service providers and connection applicants must conduct negotiations in 'good faith'. Are there any problems associated with the application of this provision?	The ENA notes the that existing Clause 5.3.6(f) states that: > Both the *Network Service Provider* and the *Connection Applicant* are entitled to negotiate with each other in respect of the provision of *connection* and any other matters relevant to the provision of *connection* and, if negotiations occur, the *Network Service Provider* and the *Connection Applicant* must conduct such negotiations in good faith. Additionally, Clause 5.5(f) requires DNSPs to negotiate in 'good faith' on a number of matters concerning network access arrangements.

(b) How would the proposed amendment for an additional 'good faith' impact stakeholders?	The ENA also notes that the rule change proponents are seeking to include a 'good faith' provision in clause 5.1.3, which outlines the overarching principles for connection to the national grid. Given the existing 'good faith' clauses in Chapter 5, we suggest that the insertion of another 'good faith' clause will make no material difference in the way parties conduct their negotiations. That said, we do not oppose the proposal to include a 'good faith' provision in clause 5.1.3. The ENA notes that a number of 'good faith' provisions already apply to network connections in the regulatory framework – these include: • The NER, rule 5A.C.3(a) specifies as part of the NECF connection negotiating framework that the parties must negotiate in good faith, this framework is likely to apply for non micro embedded generation connection applications; • The NER, clauses 5.3.6(f), 5.3.7(a) and 5.5(f) also cover obligations on the parties to negotiate in good faith in the offer to connect stage, the finalisation of the connection agreement stage and the access arrangement to the distribution system. The ENA is of the view that additional 'good faith' provisions will not necessarily improve or facilitate the negotiation process where a connection applicant is seeking to connect on a minimum standard where the network is requiring a technical standard to be above the minimum standard to address the potential for increased risks to the network or to the embedded generator. In any case, ENA member DNSPs will adopt good industry practice and will not compromise on safety nor increase the risk to other customers.
Question 3 Publishing details of information requirements (a) What are the costs and benefits to distributors and embedded generators in requiring distributors to publish information on its connection process including an application form and information on application fees and calculation of connection costs?	The ENA agrees that improved communication leading to more efficient and effective connection processes should be the primary objective to improve the current arrangements. We therefore support a Rule change that seeks to improve the connection process information requirements on DNSPs and the information required by connection applicants. The ENA acknowledges the notion that there are benefits for all stakeholders in publishing this information that provides clarity on the expectations for embedded generator applicants and this assists in the efficient handling of negotiations. There are, however, limitations on the amount of generic information that can be published and still satisfy the objective of clarity and certainty of information as ENA maintains that connection costs are very site specific and can be influenced by a number of factors. In any case, clause 5.3 of the NER currently sets the requirements on both parties to provide each other information necessary to facilitate connection to the network – therefore the ENA does not support the proposed rule change with respect to publication of information request.

	The ENA notes that the proposed Rule Change requires the DNSP to publish certain information on its website and we take this opportunity to highlight the facts that (1) in many jurisdictions, there is already an obligation on DNSPs to publish annual planning reports and (2) most, if not all, of this information is already published on ENA member businesses websites at the discretion of the network business and appropriate to the needs of their network and jurisdiction. This information typically includes: • information on the connection process for embedded generators • technical guidelines • sample application forms and member businesses anticipate the need to enhance this once the NECF is implemented We remind the reader that, on 14 June 2012, the Commission published a draft rule determination and draft rule for the distribution network planning and expansion framework rule change request. In this, Draft rule 5.13.2 of the NER requires DNSPs to publish Distribution Annual Planning Reports (DAPR) which must include the information specified in schedule 5.8. The schedule includes a range of matters including network constraints. Additionally, a DNSP is required to publish demand side engagement document, which must have the information specified in schedule 5.9. This schedule sets out the contents of the document, which includes the process for lodging a connection application for an embedded generator. In our view, the distribution network planning and expansion framework rule change adequately addresses the requirement to publish the connection process for embedded generators. As the Distribution Annual Planning Report requirements are expected to supersede jurisdictional Electricity Distribution Code requirements the ENA maintains that the Proposed Rules 5.3.1A (a) (ii) and (iv) and 5.3.1A (b) are not required. As specific comment on the types of information mentioned in the Rule Change, the ENA makes the following comments: • we support initiatives for improved communication regarding the connection process but we do not support website publication of connection fee, connection application fee and basis of charging connections, as (1) the transparency of the charges are covered in the Rules at the appropriate stage in the connection process, and (2) they will vary by the size, location and complexity of the specific project. • application forms for a new connection necessarily vary depending on whether the connection is for export or import, and on the size of connection. Therefore we believe that publishing a single form to cover all scenarios would likely cause significant confusion and frustration for prospective customers and DNSPs. As there are many permutations of generators, available network voltages and available network fault levels, which require many applications to be uniquely handled, we believe that publishing a single application form may give the connection applicant a false impression that there is a “one-size-fits-all” connection process.

	• application fees will be specific to each project and will reflect differences in size, location, complexity and connecting voltage. Therefore the ENA does not support the publication of application fees. • fees to connect to the network will vary depending upon the scope of the work required and whether the work is classified as a standard control service or alternative control service • information on the calculation of connection costs should be in accordance with the relevant AER guidelines once they are adopted in each jurisdiction. • Rules already exist to require a connection offer to make clear the basis for the distribution service charges and Rules also exist to enable a connection offer to provide different connection options/charges as part of the offer.
(b) How would the proposal to add a clause that each party 'must provide the other with information the other reasonably requires in order to facilitate connection to the network' address any problems? What are the details and examples of the current communication issues that stakeholders have experienced with the connection process?	The ENA has no specific objection to the proposed additional clause, however, we maintain that such a requirement must be supported with well documented network standards and clear guidelines on responsibilities of all stakeholders. The ENA notes that, in the experience of member businesses, connecting customers on a negotiated basis can be a complicated process involving technical (engineering), commercial (pricing) and legal discussions between the customer and the DNSP. Generally, communication issues rarely relate to information sharing and typically arise from efforts to ensure that the customer is fully aware of, and understands, a DNSP's obligations under electricity legislation and of the requirements of Chapter 5 of the Rules, or the relevant jurisdictional Electricity Act. Hence the ENA therefore does not believe that the proposed Rule change is necessary.
(c) Noting that there are currently provisions under the NER for the exchange of information, what are the deficiencies of the current arrangements?	The ENA suggests that careful consideration needs to be given to the workability of general obligations such as those proposed. There are some precedents for provisions which seek to address the challenges around information exchange. Part D of Chapter 6 of the Rules (6.7) seeks to address this in the context of negotiating frameworks for negotiated services and would probably be useful in this context. (Note also that the new Part DA does not apply to non-registered embedded generators) . There is also provision for a process in Chapter 5A.C.3 relating to times in which information is to be provided.
(d) Would the demand side engagement document under the distribution network planning and expansion framework rule change address these information requirements?	The ENA believes that the Rule proposal to require additional information regarding the connection process for embedded generators is unnecessary because: 1. the demand side engagement document envisaged by the AEMC's proposed Schedule 5.9 (as part of the concurrent Distribution Planning and Expansion Rule Change process) would require that the DNSP publishes: • a summary of the factors the DNSP takes into account when negotiating connection agreements with Embedded Generators;

	• the process used, and a summary of any specific regulatory requirements, for setting charges and the terms and conditions of connection agreements for embedded generating units; • the process for lodging a connection application for an embedded generating unit and the factors taken into account by the DNSP when assessing connection applications. and updates this document at least once every three years. 2. the Distribution Annual Planning Report (DAPR) will include a requirement for the DNSP to publish, annually, details of feeders which are forecast to experience an overload and the extent of that overload, and information relating to zone substation limitations.
(e) Should the proposed changes apply generally to all network service providers?	The current obligations and requirements on ENA members across Australia differ as a consequence of the nature of their electrical network and jurisdictional differences. Further, the challenges faced by transmission network service providers (TNSPs) may be different to those faced by DNSP's. Therefore the ENA does not believe that the requirements should be applied generally to all network service providers. We also note that the term 'network service providers' could be interpreted to include TNSPs as well as DNSPs. It is our understanding and preference that it does not include TNSPs unless specifically stated.
Question 4 Response to connection enquiries (a) In stakeholders' experience, have the response that the network service providers provided in response to connection enquiries been clear and reasonable?	The connection procedures set out in NER Rule 5.3 operate on the premise that the first step in the connection process is a connection enquiry from the customer that establishes the timing, size and type of connection proposed. However in the experience of several ENA members, this is not typical and generally, the customer first contacts the relevant DNSP with a pre-feasibility enquiry that provides basic details of potential connection options they are considering. In response to this, the DNSP typically provides as much initial information as possible and requests that the customer provide a formal connection enquiry (as per the requirements of Clause 5.3.2(a)). It also the experience of ENA members that where a connection applicant considers a request for certain information to be unreasonable it has been subsequently be resolved by an explanation of the need for the information in properly responding to the application in a timely manner.
(b) Have there been experiences where a connection applicant has been asked to provide information that it has already submitted and, if so, why?	A DNSP may have had, and likely will have a future need, to ask an applicant to clarify or explain information and material previously provided by the applicant. Generally though, it is unlikely that a DNSP would request data to be resubmitted unless the information provided by the connection applicant was not well collated and provided in a single complete package. A request for resubmission could occur where the process was highly iterative for some reason – these could include instances where:

	• a change of resources occurred during the connection enquiry process making information provided earlier difficult to find. This could occur with the DNSP or with the connection applicant and their consultants, particularly where the design or construction phases are lengthy; • a design or scope of works was still being tendered for the generator in question – as such, any information provided earlier in the process may not be current or correct; and • information is provided in an iterative manner or is inconsistent – in such a case there may be a need to confirm the correct information.
(c) Have there been experiences where a connection applicant has been asked to provide information that it did not consider was 'reasonable'? How was this situation resolved?	The ENA is not aware of this occurring and is of the view that a future occurrence is unlikely. ENA members report that in past circumstances where a connection applicant has not understood a request for information or the basis for it, a resolution has been achieved through consultation with that customer. The ENA is unaware of an instance where an applicant has considered a request to be unreasonable and this has been left unresolved. The ENA strongly suggests that EG proponents must recognize that DNSPs have a legislative responsibility to ensure that the connection of EG's does not effect the safe and reliable operation of the electricity network. Consequently the connection of EG's on the network requires careful consideration of a number of technical parameters in order to ensure a DNSP's obligations under licence conditions are satisfied. Detailed information from EG proponents of the type and extent requested by DNSPs is critical in ensuring that these obligations can be met.
(d) To what extent would the requirements for distributors to publish the demand side engagement document resolve any issues?	The ENA believes that the proposed requirements for DNSPs to publish the demand side engagement document will assist prospective applicants to understand the requirements for information.
Question 5 Information to be included in offers to connect	
(a) In practice to date, what information on connection costs are provided in offers to connect? How are the requirements of confirming to rule 5.5 being met? How are the current arrangements deficient?	Generally, connection costs are normally discussed by the relevant DNSP and the proponent during the connection enquiry process and are reaffirmed in the connection offer. The level of detail in the offer would be as per the connection applicant's request and may include a breakdown for connection/extension costs similar to a load customer connection), augmentation costs, meter type or metering services (depending on the type and size of installation) and costs, and project management costs as well as other specific optional items. The offer may also include different connection options with the different timeframes and costs for connection where there is more than one solution.

(b) How would the proposed rule to add an 'itemised statement of connection costs' improve the current arrangements? How would stakeholders be impacted if this requirement were to be introduced?	The majority of ENA members support a Rule change in Chapter 5 to require itemised costs to include as relevant connection charges, meter type and cost, cost of system extension, details of upstream augmentation to provide the connection and associated costs and any other incidental costs and the basis of their calculation. Those members of an alternative view believe that this issue is one that should be negotiated between the applicant and the DNSP. It should be noted that some ENA members already provide the customer with itemised connection costs as relevant to the particular connection. Further, the majority of ENA members support itemisation of connection charges where DNSPs have the provision to offer a range of options or have negotiated access standards. The ENA does, however, have some reservations in the use of "standard" connection charges terminology in relation to connections that may be variable in the nature of the work required to meet the particular access requirements.
(c) Should this requirement apply to all types of connections?	The ENA maintains that, if introduced, this requirement should only apply to connections managed under Chapter 5 of the Rules. Additionally, we note that Chapter 5A establishes its own requirements for information to be included in an offer and this should apply to any proponent using Chapter 5A.
Question 6 Setting out the time to connect in the preliminary program (a) Under the current arrangements (either under the NER or jurisdictional arrangements), what are the typical timeframes within which offers to connect are made by distributors?	The ENA maintains that (1) the receipt of all information is the critical driver of timeframes, and (2) the connection offer process is often, as a matter of practicality, an iterative process - hence the timeframe to require a DNSP to make a connection offer can vary. That said, ENA member businesses agree that the process proceeds most efficiently when proponents provide all requested information in a well organized manner and early in the process. We note that whilst the quality and completeness of the initial information provided by the connection applicant will influence timeframes, other parties (external to the application) that need to be consulted are not bound by the timeframes in the regulatory instruments and they are not directly answerable to the connection applicants on the timeliness of their responses – we suggest that this area of potential 'leakage' may, if addressed, assist EG proponents. Typical timeframes vary as a consequence of many factors (see our response to Question 6(b) below) but ENA members are confident that compliance with current jurisdictional requirements and, in future, Chapter 5A of the NER (that obliges a DNSP to use best endeavours to make a connection offer within 65 business days after the date of the connection application but the time taken by the applicant to provide the information reasonably sought by the DNSPs will not be counted) generally does or will provide outcomes with expected and reasonable timeframes.

(b) What are the factors that affect the timeframe for finalising an offer to connect?	In response to a connection enquiry a DNSP must provide a preliminary program showing proposed milestones for connection and access activities. The following factors are known to affect the timeframe between the initial enquiry and the offer to connect: • the size of the proposed generator or load. Generally the larger the generator or load, the more likely that the customer will require a network upgrade to connect. Until recently, this was mainly for larger generators or loads. However, significant increases in the uptake of micro and mini solar generation will require network augmentation investment to be brought forward, particularly to manage potential power quality issues for network users. • the location of the generator or load. Network constraints may complicate the connection process, and potentially require negotiations as to upstream augmentation charging. An extension to the network may also be required to connect the customer. • the complexity of the connection and the information made available by the connection applicant. For example, a customer may request departures from terms and conditions or change their connection requirements during the course of negotiations. • the customer's familiarity with the requirements of the Rules and other electricity legislation. Generally, applicants are mostly unfamiliar with the requirements of the Rules and jurisdictional legislation such as the relevant jurisdictional Electricity Act or equivalent. • the quality and completeness of the information provided as part of the connection enquiry which is used to develop the preliminary program; • the need to consult with other DNSPs or transmission businesses who may be impacted, and may need to assess the proposed connection impacts even if there is no work required eventually required of them; • the volume of applications being considered concurrently as compared to the DNSP's specialist resources that manage the negotiations to the specific requirements of the customer; • the time required to reach agreement on the connection options proposed by the DNSP and agreement to a negotiated access standard may take longer than anticipated for complex connections; and • there may also be a need to consult with AEMO on the adoption of connection standards.
(c) Is it feasible or practical to include a specific timeframe to finalise an offer to connect at the time of preparing the preliminary program? What information is currently provided in preliminary programs?	The majority of ENA members do not agree that it is feasible or practical to include a specific timeframe to finalise an offer to connect at the time of preparing the preliminary program due to the number of factors which can affect the timeframe as set out in our response to Question 6(b) above. The ENA believes that a facility that allows EG proponents and the relevant DNSP to vary the timeframe by agreement to cater for very large and /or complex generator connection applications will assist the installation and integration of EG that benefits all stakeholders. In support of this view, ENA member experience has shown that, depending on the size of the project, the need to engage a consultant to prepare an 'Engineering Report' on the impact of the EG on the Network, the development of agreed access standards and the assessment of input from the an affected TNSP can add several weeks to the process. In recognition of the above and of the Rule Change proponent's concerns, we suggest that it may, however, be

	feasible to include an 'indicative timeframe' option that should (1) exclude the time taken by a connection applicant to provide the information reasonably sought by the DNSP and by other parties (AEMO etc.) to assess the impacts of the connection such as fault levels and/or network stability, (2) permit the parties to vary the timeframe by agreement, and (3) be regularly updated by the DNSP in consultation with the proponent. The ENA notes that the process outlined in NER Rule 5.3, which mentions the provision of preliminary programs, is compulsory for Registered Participants and optional for other persons (i.e. Non-Registered Participants) and observes that ENA members cannot recall an instance where a Non-Registered Participant has elected to follow Rule 5.3, and therefore, where a "preliminary program" of the sort required by clause 5.3.3(b) would have been provided. That said, ENA member businesses typically will, where possible, provide target dates for final connection of smaller embedded generators.
(d) If adopted, should this requirement apply to all connection enquiries?	The ENA maintains that this requirement should not be included in the Rules due to the anticipated difficulties of compliance.
Question 7 Providing an offer to connect within 65 business days (a) What are the factors that affect the timeframe within which offers to connect may be made? What are the factors that impact the process for negotiating negotiated access standards?	In the view and experience of ENA members, the connection process generally works well and is optimised when connection applicants are supported by a knowledgeable independent consultant who can effectively gather specific information on design and other matters required by a DNSP. The ENA notes that the proposed amendment is consistent with Chapter 5A, however we maintain that the proposal should not apply to registered, large generators or to generators connected on the transmission system due to the complexity of these connections. The timeframe to make an offer to connect can be impacted by the following factors in addition to those outlined in our response to Question 6: • the level of the applicant's knowledge of the capabilities of their planned installation and the ongoing needs with respect to operation and maintenance • the level of engagement of the connection applicant's consultant, their workload and their experience and knowledge in these connection processes and embedded generator design; • the completeness and quality of the information initially provided in the connection application • the complexity of the connection which may result in the need to develop negotiated access standards where a connection applicant does not wish to accept the automatic access standards, there may also be a need to redesign the connection applicants embedded generator equipment to cover for example improved protection equipment. • instances where equipment is still being tendered and has not yet been selected by the connection applicant or where there is a need to redesign some of the connection applicants equipment.

	• instances where there is a need to review the updated reports to ensure that the connection offer is appropriate for the final design and negotiated access standards. Therefore the ENA suggests that a date in the preliminary program should only be considered indicative, given the number of factors (many of which are outside of the DNSP's control) that can influence the negotiation and agreement timetable. ENA members suggest that 65 days may be sufficient in some cases, but not in other cases.
(b) Have there been cases (particularly in Victoria) where 65 business days was not sufficient to finalise an offer to connect? What were the reasons for requiring more than 65 business days?	There have been, and there will continue to be, valid cases where 65 days is insufficient to allow the DNSP to make a complete offer. In recognition of this, Chapter 5A requires that a DNSP must use best endeavours to make a negotiated connection offer within 65 business days and 'the clock stops' while the customer provides requested information. The ENA maintains that this is appropriate as, in many cases, negotiating access standards (particularly for larger, complex embedded generators) may involve detailed analysis by transmission planners, protection engineers and power quality engineers in addition to primary tasks that are usually programmed well in advance of receipt of an application. Circumstances that have delayed the timeframe for a connection offers in the past have included: • the connection applicant did not submit all the information reasonably requested by the DNSP in order to assess the technical performance and costs of the required connection to prepare the connection offer. In such circumstances, the DNSP would request the information from the connection applicant in accordance with Clause 5.3.5(c) of the NER. • the connection applicant disagreed with the commercial terms and conditions in the connection agreement (in particular the liability and indemnity clauses in the connection agreement). • the DNSP needed to consider and exclude irrelevant data submitted with the connection applicant. • the need to include a requirement for consultations with AEMO and/or other network service providers and the connection conditions they may require in the connection offer. and despite a DNSP's best endeavours to provide technical guidance and support, negotiations of access standards have, at times, become protracted due to a number of situations that have included: • connection applicants have claimed that connection and network performance standards are too onerous - for example, they have considered that the required protection and inter trip requirements are too high. • connection applicants have not engaged with the DNSP until after they have completed the design, procurement or installation of their generator. • connection applicants have proceeded with the design before receiving the DNSP's connection offer. • the consultants engaged by connection applicants did not fully understand the technical requirements set out in the DNSP's connection access standards because they did not have the relevant knowledge of the electricity distribution networks (especially in protection and control requirements). We note that the negotiation of access standards is less of an issue where connection applicants engage independent consultants who have the

	relevant experience compared to those who are either the manufacturer, the installing contractor or the supplier of a particular generator.
(c) How would network service providers and connection applicants be affected by the proposed amendment? (d) Should this requirement apply to all network service providers for all connections?	In some circumstances this may require diversion of network engineers and other resources away from day-to-day operations at short notice. Whilst this is potentially disruptive to normal operations and the completion of the network's primary tasks associated with supplying all customers it is an area recognized by ENA members as needing work in order to satisfy the requirements of the NECF in the future. In ENA's view, these requirements should not apply to any connections.
Question 8 Terms and conditions of connection (a) How are the current provisions under clause 5.3.6(b)(2) being applied? That is, are the terms and conditions for connection of the kind as set out in schedule 5.6?	The ENA notes that Clause 5.3.6(b) (2) of the NER already specifies that the 'offer to connect' must include the terms and conditions of the kind set out in schedule 5.6. Despite this, the rule change proponents are seeking amendments to clause 5.1.3(b) and therefore effectively ensuring the terms and conditions set out in schedule 5.6 also apply to embedded generators. Further, the ENA supports a Rule amendment clarifying that pricing under Chapter 5 should be consistent with pricing principles under Chapter 5A and the AER's Final Connection Charges Guidelines that provides that the connection charge for non-registered embedded generators will be calculated on the total cost of the works required to support both the generation and load components of the connection service. The Guidelines further clarify that services for removing specific output constraints should be classified as alternative control, negotiated or unregulated services and that the non-registered embedded generators should pay for the cost of these services in accordance with the AER's Final Distribution Determination. The approach used by ENA members is that, where a connection application is progressed under Rule 5.3, the offer to connect will contain proposed terms and conditions of the kind set out in Schedule 5.6. ENA members comply with Schedule 5.6 as enabled by differences in individual business circumstances, risk profiles, liability and indemnity conditions, and commercial positions. In the view of the majority of ENA members, there is no one-size-fits-all or "boiler-plate" approach to terms and conditions that will be suitable for all embedded generation connections, and as such it is reasonable that the terms and conditions will vary for a range of reasons, including: • network configuration differences • different jurisdictional differences • different DNSP's pre-existing terms and conditions for various class and type of generators • where automatic access standards are adopted versus where negotiated or minimum access standards apply; • the embedded generator size and consequently its connection to the network, its export capability and reliability,

	the voltage level of the connection, the number and types of other customers on the same feeder. • the fault headroom on the network which will influence the protection equipment requirements on the connection applicant; and • where augmentation work is required.
(b) In what ways are varying terms and conditions between distributors a problem? Is it appropriate for distributors to have different terms and conditions? Does this reflect relevant differences in network requirements?	The ENA maintains that it is appropriate and consistent with normal commercial arrangements for different network businesses to apply different terms and conditions to reflect differences in: • jurisdictional legislation, including power quality, network security, reliability and network access; • the prevailing distribution determination, particularly the classification of services and connection charging policies approved by the AER. • their respective commercial and governance risk profiles.
Question 9 Technical standards for embedded generators (a) Without technical standards currently being in place for embedded generators, how well has the connection process under Chapter 5 worked in practice? How urgently are standards needed?	The ENA understands that the rule change proponents are (1) requesting an automatic access standard for cogeneration systems up to 5 MW and another for larger cogeneration between 5 – 30 MW to be provided in the NER as a matter of priority, and (2) seeking to insert a new schedule of minimum access standards (5.3b) (that are yet to be developed) specifically for embedded generators. The ENA supports the development and application of nationally consistent standards for EG equipment units and associated protection and control equipment as these will simplify the process of assessing the generating system that is to be installed (as the first component of an assessment process). The ENA believes that such 'technical standards' are useful in providing guidance for negotiation on specific installations. The ENA does not support the development and independent use of "tick box" type "technical standards" that that allow certain subsequent actions by an EG proponent such as "automatic access". The second component of the assessment process is to determine the potential impact on network safety and security of supply and any augmentation required to address this. As this assessment must be done on a case by case basis there is no opportunity to allow an automatic right of access. In the absence of minimum "access standards", the ENA maintains that the proposed rule change should not proceed until the appropriate "access standards" are developed. ENA members keenly await the opportunity to participate and assist with this work where the need and benefit for all stakeholders is demonstrated. The ENA notes that the ENA membership has already published a guideline for the preparation of documentation for connection of embedded generation within distribution networks. This is aimed at ensuring that there is consistency in the development of technical standards and processes across jurisdictions and between DNSPs and it is recognised that more work is needed to develop and refine this further.

	The ENA suggests that the connection processes for micro generation where there is an existing Australian Standard for inverter connection to the electricity distribution system allows a far smoother connection process and as such it may be beneficial to develop nationally consistent standard technical requirements for each generation class connections below 30 MW. It must be noted, however, that whilst nationally consistent standard technical requirements are preferred there are valid reasons for individual business connection frameworks (such as network configurations, jurisdictional requirements etc.) to differ. Primarily this is because the requirement to make an offer within 10 business days of receiving a completed connection offer does not always provide sufficient time to complete the essential technical and safety assessments required for connecting these customers. To date, most ENA members have not supported the concept of a "Standard Connection Contract" and have only prepared a "Basic Connection Contract" and a number of negotiated connection contracts under Chapter 5A. In the absence of such an Australian Standard for these non micro, non registered embedded generators, a number of ENA member businesses have developed embedded generator "access standards" for their own networks – whilst not completely nationally consistent they represent a practical and successful move forward to improve the transparency of requirements. These "access standards" reflect the view that each connection has to be assessed on the basis of the location and nature of the connection to the distribution system. The ENA is of the view that there is no one-size-fits-all set of standards that could be adopted nationally in the short term and the difficulties of achieving this in the short term are considerable however we suggest that there may be an opportunity to develop over time a set of 'access standards" that could be adopted within a jurisdiction. This would be similar to the Service and Installation Rules which have been developed for Victoria, they are largely consistent but they do also specify the specific differences where required between the Victorian networks. As an alternative approach, the ENA members have suggested that access standards should be developed based on the network voltage level (for example, low voltage at 430V, high voltage at 11kV and 22kV, and sub transmission at 66kV) however we note the difficulties of developing and implementing a national standard given the different jurisdictional requirements such power quality, reliability, etc. Finally, in considering our response to this question, an apparent terminology issue was observed (refer below) regarding the clarity of the use of "conditions", "technical requirements", "standards", "standardized" ' and we strongly suggest that this needs to be addressed as a matter of urgency before any standards able to be correctly interpreted by all stakeholders can be developed. The Rule Change proposal refers to an "automatic access 'standard'" and we interpret this to be a set of technical criteria (yet to be developed). This appears to be different to the "standard connection process" called up by the NECF, which defines the connection process timeframes and terms and conditions of any offers. Please note the use of the underlined terms in extracts from the Consultation Paper:

	o *Chapter 5 of the NER sets out the technical conditions for the connection of generators. However, these provisions do not apply to generating systems that are subject to, or eligible for, an exemption from registration. In the case where the Chapter 5 technical conditions do not apply, the technical requirements for a connection to the distribution network would be determined by the relevant distributor in accordance with jurisdictional and local network requirements. To provide for greater certainty and timeliness in processing connection applications for embedded generators, the proponents suggest that automatic access standards for embedded generators be developed. The rule change request does not include an actual proposed standard or suggestions of how it may be developed or by whom.* o *Chapter 5A of the NER, which is to be introduced as a part of the national energy customer framework, has been developed to provide for more standardised connection processes for some types of embedded generators. Under Chapter 5A, distributors will be required to develop 'model standing offers' for micro-embedded generators, which are typically installations with a nameplate rating up to 10kW. Distributors will also have the option to develop standing offers for other types of embedded generator categories (potentially categories for installations between 10kW and 30MW).* o *Technical requirements or standards for distribution networks are determined in accordance with jurisdictional and local requirements. As a result, the technical standards that apply to embedded generator connections vary between distributors. The proponents consider that at times these technical requirements 'are not clearly and comprehensively identified at the beginning of the connection process' and can therefore result in 'significant costs and undermine the viability' of a project as it impacts the ability of the embedded generator to make relevant commercial decisions.* o *The proponents also note that 'some technical requirements imposed by DNSPs disallow exports of electricity to the grid'. This can impact project proponents' options with regards to viable solutions they can implement and has resulted in project proponents installing units they consider are not scale efficient.*
(b) Would standards for different types/classes of embedded generators be required?	Yes, the ENA maintains that there should be a differentiation between smaller PV systems and larger systems that typically involve synchronous machines. The Australian Standard AS4777 already exists for installations less than 10kW per phase for PV systems and additionally several ENA member businesses currently distinguish between the following generator size ranges for connection: 0-30kW, 30kW-1MW, 1MW-5MW, >5MW. In each case the technical solution is governed both by the nature of the generator and the proposed connection point to the distribution network that must consider: • the level of generation already connected; • the voltage to which the generation is to be connected; • the size of generation system to be connected; • the type of generation system proposed; • the electrical strength of the network at point of connection

	• the requirement to import and / or export power • the adequacy of EG and network fault protection systems requirements • the adequacy of control and monitoring (eg SCADA) systems • power quality capabilities (including voltage fluctuations and harmonics)
(c) What factors should be taken into consideration in developing such standards? Are there any specific jurisdictional or local requirements?	See previous answers to Questions 9(a) and 9(b). The ENA notes that each jurisdiction has specific safety requirements as part of licence conditions that DNSPs are required to meet whilst operating within pre-existing Service Installation Rules. Some jurisdictions also specify power quality and reliability conditions which should not be compromised by an embedded generator. Alternatively, if an embedded generator is put forward as a proposal for network enhancement or augmentation then it must, in the ENA's view, meet the same licence conditions.
(d) What should be the scope of such standards? Can all relevant technical requirements be 'standardised'?	In the ENA's view, standards should be relatively high level, performance focused documents with minimal prescriptive content to allow the embedded generator to arrive at optimal solutions. The ENA maintains that the scope of such standards should only apply to EG equipment and installation practices. Further, the ENA is strongly of the view that this equipment must be certified to an acceptable and relevant international or Australian Standard. While it is possible to develop generic generator solutions at an equipment and installation practice level, each proposal must be examined on its merits and may contain unique factors consistent with the location and point of connection to a network. As each point of connection is unique, there can be no generic electricity network model and the ENA suggest that the current degree of standardisation is sufficient in areas other than for equipment. The ENA also suggests that the level of technical information already provided by DNSPs needs to be recognized and reviewed before any further action on planning or developing standards occurs. Where such development is deemed appropriate, the ENA and our member businesses keenly await the opportunity to participate and contribute.
Question 10 Embedded generators having an automatic right to export to the grid (a) Under what circumstances have embedded generators not been allowed to export electricity to the	The ENA and our members insist that embedded generators exporting to the grid must ensure safety, network stability, power quality and supply reliability through, as a minimum, compliance with relevant standards and regulatory requirements. The ENA 1. does not support unlimited export capacity for embedded generators in all cases. This would introduce risk to DNSPs technical, reliability and safety requirements. ENA member businesses have obligations to ensure that

network?	their network operates in a safe and reliable manner and unlimited export capacity for embedded generators could impact on their ability to do this. 2. supports limits on export capacity continuing to be set out in the connection contract In order to connect to members' networks, a generator must satisfy technical requirements to maintain: - safety to customers, personnel working on or near the electricity network and the general public; - protection of equipment, including network assets and other customer installations - reliability and quality of supply to customers. These principles are applicable to all customer connections however, it must be recognised that it is typically more technically complicated to connect a generator that can export electricity to the network than it is to connect a load or a generator that will not export. Addressing these technical requirements can be expensive, and a proponent may elect for a cheaper installation in preference to being able to export. The ENA notes that Chapter 5 recognises that there may be a range of options to augment the network which are provided as part of a connection offer. These can include a compromise between generator size and export quantities versus upstream work required to remove constraints. In the ENA's view, the EG proponent needs to base their decision on the balance of export price revenue versus the initial connection costs and ongoing costs associated with system operation and maintenance. An approach with this focus will lead the proponent to make an economically rational decision on whether to export or not with due consideration of the cost of meeting necessary technical requirements. There may have been instances, of which the ENA is unaware, where embedded generators have not been allowed to export electricity to the network – we suggest that this would have been because they did not meet a technical requirement for connection, or were unwilling to pay an appropriate capital contribution (if required under electricity legislation or the AER Distribution Determination) for dedicated assets. To our knowledge, generators connected to ENA member's networks have been able to export to the grid up to the limit specified in their connection contracts when the network is available. In reviewing this Consultation Paper, several ENA members have registered their concerns that embedded generators exporting to the grid have a potential to impact adversely on DNSPs, TNSPs and all other customers connected to the distribution network. Unstable generators can have serious detrimental effects on power quality and on the operation of protections on the distribution network and as such most cases of assessing a connection application require stability studies to model the generator behaviour during and following credible network disturbances. Modelling of the generator may reveal that connection to certain parts of the distribution network will degrade power quality such as voltage regulation, harmonics, flicker etc. If that is the case, it may be necessary to connect at a different part of the network such as a higher voltage level. Alternatively, the DNSP may specify additional protections for the generator such that it limits the export to ensure network safety, stability, reliability and

	quality to other users connected to the network. If a generator exceeds the power export limit, under certain conditions it can cause problems on the network (such as exceeding plant thermal ratings or causing excessive voltage fluctuations) – hence DNSPs generally require embedded generators to have protection systems to limit the export and to disconnect the generator if normal control systems fail.
(b) What are the impacts on embedded generators and other participants when exporting is not allowed?	In the experience of ENA members to date, most EG proponents are seeking to offset their local supply and are motivated by • sustainability objectives (or requirements), • the desire for local back-up, • a potential for a reduction in their electricity bills, rather than by a desire to export as a commercial venture (that will require resolution of a range of retail and trading issue in addition to the technical aspects). More recently however we have seen increased interest in the ability to export to provide additional income to the proponent and the ENA believes that the decision by the EG proponent on their system configuration and an operating arrangement is primarily a commercial decision that should account for the cost of overcoming the technical requirements and constraints of the DNSP.
(c) Are there circumstances where the ability of embedded generators to export electricity to the network should be limited? What conditions could be reasonably imposed to limit exporting?	The ENA is of the view that, provided the requirements for connections to a network outlined in our response to Question 10(a) are satisfied and the exporting of electricity to the network does not adversely affect the quality of supply to other network users or the safety of the network and its users, there should be no reason to limit export to the network. However it must be recognized that, depending on conditions on the local area of the network, there may be a need to limit export as it may impact the voltage level on other customers and could breach the regulated voltage level requirements. Additionally, adverse impacts of EG on the distribution network can have consequences on the transmission network if the distribution network is operating at other than a normal network configuration. Unless network studies have been undertaken for the alternative configuration, export may be required to be constrained during these times. For these reasons the ENA suggests that details of an EG proponents' response under alternative configurations should be agreed at the time of contract negotiation. In addressing this, a proponent may elect to undertake additional network tests at pre-feasibility stage – these would identify whether normal or constrained export can be expected at other than normal configuration, or whether additional augmentation is required to enable unconstrained export at these times. It must also be understood that there are different safety issues associated with generation as compared to load only customers. When the network has no supply capability because network protection equipment is tripped there is a safety requirement that electricity will stop flowing and that EG ceases to operate and export to the distribution

	network - this includes exporting to a smaller set of customers to ensure that community and employee safety is maintained.
(d) What are the costs and benefits of allowing, and not allowing, embedded generators to export electricity to the network?	The ENA suggests that the potential benefits for network businesses and broader stakeholders in allowing efficient embedded generators to export electricity include: • a reduction in greenhouse gas emissions that assist customers to make a directly visible contribution to improved environmental outcomes. • deferring network augmentation requirements, thereby reducing the cost of network services provided by DNSPs. It should be noted there is evidence that recent access to distribution networks for micro and mini embedded generators is causing the DNSP to bring forward network augmentation requirements simply to provide sufficient headroom for these generators, and manage power quality requirements within legislated levels. • creating diversity in electricity supply resulting in enhanced electricity supply security. Obviously, limitations on embedded generators to export to the grid may diminish the access to these benefits however actions taken by DNSPs to manage the risks associated may override a pure cost / benefit consideration. As a balance to the benefits side of the equation, the ENA suggests that many of the technical issues that potentially complicate an EG installation can be easily resolved through investment in the network or at the customer's installation – typically these solutions are expensive and this often leads to disagreement on the responsibility for the investment – even more so when research and testing is required to establish that an EG technology is reliable. The ENA is aware of the issue and various stakeholder views on whether generators should pay for deep network augmentation required for their proposal, or be paid a deferred DUOS or TUOS charge. The ENA notes the common arguments against making these payments include: • that generators cannot, for technical reasons, be relied on for network support and have no contractual obligation to operate at the times they are needed; • that an upgrade to the shared network is often required to accommodate embedded generation, both to manage fault level requirements, and voltage regulation in order to accommodate the EG's export, as well as additional capacity and connection points to convey the generated energy. Furthermore, in the experience of ENA member businesses to date, EG operators that have connected EG systems to their network have sought to retain access to network supply for standby / backup to cover maintenance and failures of their generation systems. This results in an unfavourable situation where other customers are cross-subsidising the EG operator through funding the maintenance of network assets still used by the EG operator at no cost to them. Generally, DNSPs plan the network on the basis that the embedded generation will not be generating (irrespective of

	the ability to export) and then enter network support agreements with existing embedded generators to defer specific investments where it is technically and commercially viable to do so. As part of this process the reliability of the generator to provide cost effective network support is assessed. It should be noted that it is not necessarily a requirement for a generator to operate in parallel with (and export energy to) the network to be suitable for network support. For example, many customer backup generators are used for network support via an agreement to simply remove the customer load off the grid and transfer it to the generator in island mode.
(e) Is there any basis for embedded generators to be treated differently to load or other generators? For what reasons?	In the view of the ENA, a customer negotiation and the economic and regulatory frameworks should be based on consistent principles – whether the load is "positive" or "negative". However, the specific issues affecting embedded generators may result in a need to treat EG systems differently to load customers and other generators where there are technical reasons to do so, or if the rules and other applicable regulatory instruments require that they be treated differently. Generally, DNSPs will connect load and generators to the distribution network where it is technically and economically feasible to do so in accordance with jurisdictional requirements and provisions. In circumstances where this is not the case, the customer may not be connected. As an example, this can occur where an embedded generator is unwilling to pay an appropriate capital contribution for dedicated connection assets. From a technical perspective it must be recognized that managing embedded generators requires a different approach as compared to managing loads as generators are an active connection and so contribute fault current. They also increase the voltage at their connection point and have additional stability and power quality considerations relative to scale and location of their connection and how these installations are operated. Where an embedded generator is a source and when operating in parallel with the distribution network it has the potential to supply other customers on the network beyond the connection point. If a generator connection to the network is not adequately designed, it has the potential to 'island' and cause • severe damage to the distribution network and the equipment of customers connected to it. and adverse impacts on • health and safety risks to operational personnel, contractors and the general public. • the quality of supply to customers connected to the islanded electricity distribution network - this will be determined solely by the generator's own control systems and may breach the jurisdictional and other operating standards imposed on DNSPs. Consequently, adequate protections schemes are required to ensure embedded generators do not 'island' to any part of the distribution network that supplies other customers. Therefore the ENA is of the view that embedded generators must be treated differently to load.
Question 11 Allowing distributors to charge an optional fee for	As a general principle, the majority of ENA member businesses welcome the opportunity to work with proponents in developing their connection applications for a "fee for service".

service (a) What are the barriers that prevent network service providers from charging a 'fee for service' under the current arrangements?	The ENA supports a rule change that explicitly allows optional fee for service where these services could include initial investigations on the distribution network up to the embedded generator point of connection including network studies (e.g. fault levels calculations, impact to distribution network protection etc.) prior to a connection applicant submitting a connection application. These services can potentially reduce the application fee for processing the connection application. Under current jurisdictional arrangements, some DNSPs are already entitled to charge an application fee for large customer connection applications (which includes small and medium embedded generator applications). The service is currently classified as an alternative control service (quoted service), and the fee is determined in accordance with the quoted services formula determined by the AER. It covers all work reasonably anticipated to arise from investigation of the connection application and preparing the offer to connect. The proponent suggests that, to incentivise the DNSP to efficiently progress embedded generation applications, the DNSP should be able to levy a fee to process the connection enquiry – in support of this it should be noted that the current Victorian regulatory framework, under Guideline 15, Clause 2.3, DNSPs are entitled to charge an application fee which is payable on lodgement of the connection offer. This application fee covers investigation work once the DNSP has received an application and includes any investigation work and preparation of an offer. Currently Guideline 15, Clause 2.2 prevents a DNSP from charging for any information that the DNSP provides during the enquiry stage, prior to the lodging of the connection application however it is expected that the commencement of NECF will remove this restraint. The proposed Rule Change appears to cover the existing application fee under Rule 5.3.3 (c) (5) to process the connection application as opposed to dealing with a fee covering the enquiry and development of the connection application stage. It should be noted that NER rule 5.3.3 (c) (5) of the NER provides for DNSPs to charge an 'application fee' that would cover the reasonable costs to investigate (where AEMO or other networks need to participate in the assessment) an application to connect and prepare the offer to connect (it does not however provide for DNSPs to charge a fee for services provided during a connection enquiry stage). Similar arrangements are provided for in NER under Rules 5A.C.4, the reasonable costs in assessing an application and making an offer and Rule 5A.D.4 allows for the reasonable expenses where a site visit is required. The ENA does not agree with the Rule Change proponent's suggestion that distributors do not have an incentive to collaborate in the connection enquiry phase or in the development of the connection application. The Rule Change proponents suggest that an additional fee prior to the connection application being lodged may facilitate a smoother process and have suggested a new rule 5.3.3 (b) (7). If the Rules were to be changed in this respect, the ENA suggests that the following text (as an addition to 5.3.3 (b) (7)) better addresses the Rule Change proponents concerns in the response to connection enquiries:

	Details of any additional fees or services that the Network Service Provider may provide to facilitate feasibility studies, options analysis or design or any other activities that will assist the connection applicant's connection application. Whilst DNSPs are required to deal with a connection application and make a connection offer to the network, they are the only party who can generate the connection offer. Therefore the ENA maintains that DNSPs should be able to decide whether they wish to provide this additional service in the pre connection application phase as there are a number of consultants already providing such services.
(b) Is the proposed rule sufficient in identifying what services would be provided for the 'fee for service'? If not, how should the relevant service be specified?	The ENA's understands that the Rule Changes proponent has proposed a 'fee for service' in order to "provide the DNSPs with a greater incentive to collaborate constructively" and it appears that the proponent may be suggesting that the service provided by the DNSPs is a "negotiated service". The ENA requests further information to understand how the proposed service does not form part of the distribution service performed by DSNPs. In terms of the extent of the services to be provided, a number of ENA members have advised their view that the design of a generator installation is the responsibility of the generator proponent. Irrespective of whether the DNSP has the specialised in-house design expertise to assist the proponent this may expose them to unacceptable risks and legal liabilities. It is therefore the preference of some ENA members that embedded generator connection applicants should directly engage their consultants for the design of a generator installation. By doing so, they are directly involved in the cost, timeliness and quality of the work. Under this scenario, the DNSP will only seek to influence the design to the extent that the integrity of the design is seen to be inadequate and may undermine the reliability and quality of supply to other users of the network. In this case there will be a reliance on standards that focus primarily on plant design, network connection and isolation, protection, control of fault levels, earthing, equipment specifications at the network interface and elements of the generator installation that could impact the distribution network.
(c) What factors should be considered on how such a service should be classified? That is should it be a direct control service or negotiated service? Should the service be on a cost recovery basis only?	The ENA notes that the AER applies criteria specified in the Rules to determine which services are classified as; - direct control services (and then further as standard control services or alternative control services), - negotiated distribution services, and/or - unclassified services. Following this the AER determines the form of control that applies. The ENA notes that the service already provided by some DNSPs in assessing generator connection enquiries or applications is treated as a standard control service. If the AER concurs that the service is a standard control service, the form of control is likely to be a cost-based (fee or quoted) mechanism. More specifically, NSW based ENA members note that, in NSW, these services are provided by the market and are

(d) Should the NER provide any guidelines on how such a fee should be determined or should it be negotiated between a distributor and embedded generator? Should the fee be approved by the AER and, if so, on what basis?	contestable. As such, the actual costs of the provision of the service are ultimately funded by the customer. This would be an "unclassified service" consistent with the AER Connection Charge Guidelines (Clause 3.1.2) and as such, on NSW DNSP believes that this should not be classed as a "negotiated distribution service" or an 'alternative control service' in an AER Determination. Therefore even where a DNSP chooses to under take this service (as a contestable service) a "fee for service" approach is inappropriate. As noted above, the question posed pre-supposes that the service provided by the DNSP is a negotiated service (for the purposes of service classification). It is not clear how this conclusion has been reached. The question posed also seems to overlook the defined role of the AER in the classification and regulation of services provided by DNSPs. As the services will be project specific, the ENA does not believe there is a need for a guideline on how such a 'fee for service' should be determined. We believe the fees should be negotiated (as a negotiated service) between the parties on a full cost recovery basis.
Question 12 Shared network augmentation costs (a) Is the current approach to attributing connection costs, particularly in relation to shared network augmentation costs, inefficient, inequitable and not cost-reflective? For what reasons?	The ENA is of the view that the current approach to attributing connection costs, particularly in relation to shared network augmentation costs, seeks to balance the economic and equity considerations. Further, the ENA supports consistency in the approach for calculating connection charges under both Chapter 5 and 5A of the Rules and therefore the AER's Final Connection Charges Guideline. Shared network augmentation is a core distribution service, the costs of which are recovered in use of system charges levied on load customers. In circumstances where a customer requires an augmentation to the shared network, and the DNSP considers that the benefits of this augmentation will not be shared with existing or new customers, the assets will generally be considered to be 'dedicated', and the customer will be requested to provide an appropriate capital contribution. This approach is applied to all connecting customers, whether load customers or generation customers. It is noted, however, that any use of system charges which may be paid by generation customers does not currently cover a notional network capacity 'allowances' to receive their export capacity. This is noted by the AER in its Connection Charging Guideline (June 2012) Final Decision: *The key difference between embedded generators and load customers, which require different treatment with respect to connection charges, is that embedded generators do not contribute to the cost of the shared network through DUoS charges*. *(p65)* *The AER considers that (consistent with transmission connected generators), non-registered embedded generators will not generally be required to make a contribution towards the historical costs of the shared network, which are funded through DUoS charges to network users. This is appropriate because embedded generators have no firm right of access to the shared network and are subject to network constraints for*

exporting electricity. As such, the cost-revenue-test under section 5 of the connection charge guideline will only include connection services which relate to customer specific incremental costs.

However, if a non-registered embedded generator is connecting (or already connected) to the network and seeks to remove constraints in the upstream shared network, the non-registered embedded generator should meet the cost of removing these constraints. This is appropriate because the constraint would be removed for the benefit of the embedded generator only and the AER considers that if equipment is added for generators, which no other customers require, then the embedded generators should meet the cost. Otherwise all existing electricity users would fund the requirements, which is not consistent with user pays principles and may also create cross subsidies between classes of users.

The ENA maintains that, irrespective of whether the customer is a load or generator, the DNSPs should have certainty for recovery of all connection costs and remain whole. The ENA does not accept that it is appropriate that DNSPs should accept the commercial risk for significant upstream expenditure to remove constraints in the absence of an ability to obtain cost recovery via a customer contribution with the remainder being in the RAB.

Despite the fact that a connection applicant seeking to build an embedded generator and connect to the network is making a commercial cost/benefit decision, the Rule Change proponents appear to consider that it is inappropriate for embedded generators to be paying their full connection costs including those on the shared network as this is inefficient, inequitable and not cost reflective. The ENA does not support the proposal that all customers on the network should pay for the removal of the constraint on the network for the benefit of the EG applicant. The ENA strongly suggests that the issue of whether small customers should bear additional costs for the benefit of embedded generators is a major issue that policy makers should address as a matter of urgency.

The Rule Proponent notes that there are no shared network costs allowed in the connection charges in Chapter 5A for a basic connection service where the connection is not for a non registered embedded generator. The ENA suggests that this is appropriate as a basic connection service is defined as a service for a significant class of customers (including micro embedded generators) and the connection service involves minimal or no augmentation of the distribution network.

Chapter 5A does therefore require a non registered embedded generator to pay for relevant costs on the shared network where there are augmentation and extension costs. The ENA consider that the policy decisions already made in relation to NECF should be implemented first without further change, as such the ENA does not support the proposal to amend Rule 5.5 (f) (3) and limit any size embedded generator from paying its total costs of connection unless there is a significant change in policy position.

The ENA encourages members to continually seeks to improve the economic efficiency of their network tariffs, particularly to remove any inappropriate cross-subsidies between customers, including load and generation customers – hence the ENA believes that the AEMC should consider whether it is appropriate for an embedded

generator to pay shared network charges for the shared network capacity notionally made available to the generator to export energy into the distribution network (a benefit embedded generators currently receive for free). In this context, the intended operation of clause 6.1.4(a) of the Rules should be clarified.

The ENA notes the approach to recovering shared network augmentation costs from embedded generators under Chapter 5A and the AER's Connection Charging Guideline (June 2012):

- Under Chapter 5A, micro embedded generators are exempt from shared network augmentation charges if they apply for a basic connection or "a relevant threshold in the DNSP's connection policy is not exceeded". This threshold must be based on a measure of demand (required by the AER's Connection Charging Guideline). Therefore, if a micro embedded generator is below this (demand) threshold (to be approved by the AER), they will be exempt from shared network augmentation charges.
- Non-Registered embedded generators are dealt with in section 7 of the AER's Connection Charging Guideline. Non-Registered embedded generators which seek to remove a specific network constraint will generally pay for this, unless "the DNSP's normal asset management may lead to a DNSP funding such shared network augmentation if there is a demonstrable net benefit to other network users".
  This condition is relatively broad and has the potential to cause disputes between non-micro EG connection applicants and DNSPs. In addition, this service is to be classified as an alternative control service, which may add additional complexity to how the costs are to be recovered from customers.

The ENA supports the principle that a non-registered embedded generator that seeks to remove a specific network constraint must pay for the cost of removing the constraint including any augmentation costs of the shared network. We do not agree with rule change proponents' suggestion that the NER should be amended to the effect that all embedded generators are exempt from paying shared network augmentation costs. The ENA suggests that if embedded generators do not pay their share of alleviating network constraints the result will be upward pressure on network charges for all customers.

In this respect, the ENA notes that in the AER's final decision on connection charge guidelines, the AER makes the following statements with respect to embedded generation:

> *"The AER's final decision is set out in section 7 of the connection charge guidelines for electricity retail customers. In summary:*
>
> *The capital contribution for non-registered embedded generators that are also load customers will be calculated based on the total cost of the works required to support both the generation (expected electricity output) and load components of the connection service.*
>
> *No incremental revenue will be received by the DNSP from the generation component.*
>
> *The relevant load for the purposes of calculating shared network cost will be the gross peak demand*

	of the load, regardless of the embedded generator's expected electricity output. *Non-registered embedded generators which seek to remove a specific network constraint must pay for the cost of removing the constraint. The AER considers services related to removing shared network constraints for specific users, such as embedded generators, would generally be an alternative control service, negotiated service or unclassified service. However, a DNSP's normal asset management may lead to a DNSP funding such shared network augmentation if there is a demonstrable net benefit to other network users. Non-registered embedded generators will not be charged a unit rate for shared network augmentation (based on the generation output)."*
(b) Should embedded generators (noting that embedded generating installations can encompass a broad range of installations) be exempt from paying shared network augmentation costs? Why or why not?	In relation to questions 12(b) and 12(c) when considering whether generators should be exempt from paying shared network augmentation costs, the ENA suggests that a critical factor for consideration is whether it is appropriate for the broader customer base to completely fund augmentation costs associated with all generator connections within the distribution network. That is, if the EG proponent generator does not fund the required augmentation the costs are unfairly shared across load customers. If any changes were to be made to the existing national and jurisdictional arrangements, the ENA proposes that a careful consideration of the allocation of these costs to the broader customer base would need to be undertaken. The ENA maintains that customers, including embedded generators, should pay for dedicated assets, and contribute to the cost of shared asset augmentation, whether those be upstream or at the connection point. This ensures all connection applicants are provided user pays signals and, to the extent practicable, ensures compliance with the Pricing Principles provided in Section 6.18.5 of the NER in the formulation of tariffs and development of pricing signals. Many ENA members seek to satisfy pricing objectives to (1) support and complement the NER Pricing Principles; (2) ensure that tariffs and pricing are be cost-reflective and equitable, and (3) ensure that there is no cross-subsidy between each tariff class of standard control services, nor between standard control and alternative control tariffs. The ENA is of the views that requiring embedded generators to contribute to shared network augmentation costs supports these objectives.
(c) If embedded generators are exempt from shared network augmentation costs, how should these costs be allocated?	Refer to our response to Question 12(b) In ENA's view, embedded generators should not be exempt from shared network augmentation costs solely attributable to that customer. For clarity, this is not the same as the "tipping point" approach because, in these cases, the augmentation will be to the benefit of future customers and therefore not solely attributable to the "tipping point" customer.

Other issues The rule change request, either directly or indirectly, raises a number of other issues. These include:	
Impacts on transmission network service providers (TNSPs) and other participants - We understand the focus of this rule change request to be on the provisions for the connection of embedded generators. However, as outlined throughout relevant sections of this chapter, some aspects of the proposed rule apply to all 'network service providers' and 'connection applicants'. This expands the potential impact of the rule change request to include TNSPs and all connection applicants.	The ENA makes no comment on this issue.
Distributors publishing annual reports - The rule change request proposes that distributors should be required to publish annual reports identifying capacity constraints in their networks. The rule change request considers that the proposed provisions being considered by the AEMC under the distribution network planning and expansion framework rule change, if adopted, would be sufficient to meet the objectives of the rule change proposal	The ENA notes that: 1. many member businesses already publish this information in their Distribution System Planning Reports in accordance with jurisdictional requirements. 2. This matter is also addressed under the "*AEMC's Draft Rule: National Framework for Electricity Distribution Network Planning and Expansion",* which introduces extensive reporting requirements for DNSPs on capacity constraints.