

Your ref ERC0147
Our ref
File ref G:/MEP/Tech/Energy/CCHP

ARUP

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235
Attention: Steven Graham

Level 17
1 Nicholson Street
Melbourne VIC 3000
Australia

t +61 3 9668 5500
d +61 3 9668 5459
f +61 3 9663 1546

rob.clinch@arup.com
www.arup.com

8 August 2012

Dear Steven,

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

In response to your consultation paper, referenced ERC0147, we provide this submission in response to the proposed rule change.

Arup is an international consulting engineering firm which has been operating in Australia for almost 50 years. Within the context of this consultation paper, Arup provides engineering design services within the built environment, which includes electrical services, mechanical services and environmentally sustainable designs.

Recent experience with embedded energy systems have included feasibility studies associated with precinct wide redevelopments at a variety of locations as well as detailed designs incorporating embedded generation associated with data centres in Melbourne and cogeneration installations in commercial buildings in Sydney. Based on this experience, we have noted the following issues:

- Lack of clarity in the definition of embedded generation, particularly in relation to Diesel Rotary Uninterruptible Power Supplies (DRUPS);
- Lack of published detail of the interface requirements for embedded generation within distribution networks, particularly for the mid-range machines considered in this consultation paper. This has been or is being addressed by different networks to varying degrees.
- Equipment suppliers who have satisfied the requirements of network providers elsewhere in the world may not have adequately transferred this knowledge and practices locally, to the satisfaction of the local network providers.
- The application process for embedded generation is variable between the different networks and evolving.
- In all cases, the network provider was prepared to engage in an application process, however, the effectiveness of this engagement varied for each project.
- There has never been any discussion of sharing the benefits of deferred network augmentation which might result from an embedded generator.

We consider that the rule changes proposed in the ClimateWorks, Seed, Property Council of Australia submission will be helpful in expediting network connections for embedded generators, in a consistent way, and encourage the adoption of energy efficient technology through local capture of waste heat in the generation process.

We provide the following responses to some of the specific questions raised in the Consultation Paper:

QUESTION	COMMENT
Question 1 – Complying with Chapter 5	We concur with the submission that Chapter 5 has been drafted with large generators in mind, with onerous connection requirements. This is inappropriate for moderate sized embedded generators which may not even export to the grid and generally are sized to match the captured waste heat to the needs of the host facility. Clarity in acceptable connection requirements for this size of embedded generator needs to be established.
Question 2 – Good Faith Provisions	Our experience in discussing network connections for embedded generators have generally been undertaken “in good faith” by the LNSPs. Our perception is that some of the technical issues requiring resolution have not been addressed previously by the individual network, and therefore there is an element of “learning on the job”. This approach can produce acceptable technical solutions, but can introduce time and cost penalties to the embedded generator proponents.
Question 3 – Publishing Details of Information Requirements	The LNSPs with whom we have had contact are all in various stages of developing documents for publishing network connection requirements for embedded generators which fall in this moderately sized category. We would expect that all LNSPs will develop their own publications which will reflect the local conditions. Nevertheless, some consistency across all networks would be desirable so that experience from one location can be shared elsewhere. Also consistency across jurisdictions will assist proponents and equipment suppliers in providing the required information expeditiously, particularly where repeat installations are proposed in different locations.
Question 4 – Response to Connection Inquiries	Responsiveness of LNSPs to connection enquiries has been variable. Generally, the LNSPs are prepared to engage, but the lack of detail provided by the equipment supplier and the availability of LNSP staff to review and understand the proposed technology has resulted in delays and resolution of technical issues. Over time, all LNSPs will have the experience to develop a range of connection request information sheets which will reflect the diverse

	range of potential projects, for any proponent to choose from.
Question 5 – Information to be Included in Offers to connect	<p>Currently, offers to connect develop through an iterative process, as there is an appreciation by the LNSP of the project proposal as well as an appreciation of the LNSP's requirements at that particular location, to accommodate the proponent's project.</p> <p>From the proponent's perspective, the earliest knowledge of all up stream costs is paramount in finalising their investment in the proposed generation project.</p>
Question 6 – Setting out the time to connect in the preliminary program	Often, a problem in engaging with LNSPs is the lack of prior notice by the proponent. This is in part due to the proponent considering a range of options in scheme development which may or may not include an on-site embedded generator. Once a decision is made to include the on-site generation, then time constraints imposed by the LNSP, from the proponent's perspective, can have cost implications. To alleviate this situation, the proponent needs to engage with the LNSP as early as possible, without generating frivolous inquiries, once the proponent has sufficient information to provide the initial data for the LNSP.
Question 7 – Providing an offer to connect within 65 days	An offer to connect within 65 days is not unreasonable, provided that the proponent and his equipment suppliers, are capable of providing all the necessary up front information to the LNSP. Hence the starting point for the 65 days should not be from the time of application, but upon acknowledgement from the LNSP that all necessary information has been provided to the LNSP.
Question 8 – Terms and Conditions of Connection	No comment
Question 9 – Technical Standards for Embedded Generators	Technical standards are being developed by LNSPs to varying degrees of completion. There ultimately will need to be a range of standards to be developed for different technologies. As far as possible, proponents and LNSPs would benefit from the experience of others if common standards were applied across LNSPs. However, there will be different local requirements, particularly in different climate zones, which may make this impractical.
Question 10 – Embedded Generators having an automatic right to export to the Grid.	<p>Our project experience does not include exported power.</p> <p>Any automatic right to export to the grid must take into account existing local network limitations. Also, in the case of cogeneration/trigeneration, the expected benefit is to use the waste heat from generation to displace costs associated with other energy uses.</p>

	The size of any exporting embedded generator should have the capability to continually utilise the waste heat and not dump any excess captured heat.
Question 11 – Allowing Distributors to Charge an optional fee for service	<p>LNSP's should be able to charge a "design fee" where resources are required to design network elements to accommodate the proposed embedded generator . This should be a second step in the detailed costing work required to inform a formal offer to connect.</p> <p>In early engagement between the proponent and the LNSP, the LNSP should be capable of providing indicative budget costs to assist the proponent in finalising a decision to proceed, at no cost to the proponent.</p>
Question 12 – Shared Network Augmentation Costs	The proponent for an embedded generator should not be charged with the full augmentation costs on a "last in worst dressed" basis. We agree that this approach is inequitable, and a standard formula for sharing costs on a consistent basis needs to be established across jurisdictions. In addition, some consideration should be given to sharing of cost benefits associated with deferred augmentation for LNSPs where the embedded generator reduces the planned growth in load on local network assets and deferral of planned works.

We trust that our response will be of assistance to AEMC in its deliberations on the proposed rule change.

Yours sincerely

Rob Clinch
Associate