

Submission

No 13

INQUIRY INTO THE ECONOMICS OF ENERGY GENERATION

Organisation: Ausgrid
Name: Mr Peter Birk
Position: Executive General Manager System Planning and Regulation
Date Received: 10/02/2012



10 February 2012

Mr Jonathan O'Dea MP
Chair
NSW Parliament Public Accounts Committee
Legislative Assembly
Parliament House
Macquarie Street
SYDNEY NSW 2000

570 George Street
Sydney NSW 2000
All mail to GPO Box 4009
Sydney NSW 2001
T +61 2 131 525
F +61 2 9269 2830
www.ausgrid.com.au

Dear Mr O'Dea

Inquiry into the comparative economics of energy generation

Ausgrid welcomes the opportunity to provide a response to the inquiry into the comparative economics of energy generation in New South Wales. We understand the importance of energy security issues to NSW.

As a NSW Distribution Network Service Provider (DNSP), the following response focuses on the fifth aspect of the scope of the enquiry; that is the potential for, and barriers to, the development (and expansion) of embedded generation on an electricity distributor's network as an alternative energy source in NSW. Our comments are based on our experiences related to the connecting of Embedded Generation (EG) to the Ausgrid distribution network.

Technical connection of generators to distribution systems

Ausgrid's experience in facilitating the connection of proponent's embedded generator connections, has illustrated that most, if not all, "technical barriers" to the development of embedded generators can be addressed by some form of investment; either as a direct cost to the proponent, a cost to the distribution network operator's customer base (through network charges) or through a government facilitated subsidy of some form or other.

These barriers are therefore more appropriately represented as issues that impact on a project's economic viability rather than as a technical barrier.

Regardless of the connection point of an embedded generator within a distribution network; whether it be a more direct connection to the network or a connection within a customer's installation, the upstream (or shared) network must have sufficient capacity to supply the load requirements of customers while also accommodating the requirements of EGs. This means the network needs to:

- i.) have the capacity to accommodate variations in normal loads;
- ii.) accept the energy feed (or exported) by EGs into the distribution network; and
- iii.) provide a backup to the load normally supplied by the EG.

The costs of the associated connection assets and any shared network augmentation can be very significant, depending on the location and characteristics of the distribution network in that area and the characteristics of the EG.

Impact of embedded generator on network performance

The distribution network is the transport mechanism for energy and DNSPs need to maintain required levels of network performance for all connections. Historically, a distribution network has been uni-directional; (ie, it transported energy from the generation sources to the customers). This uni-directional flow has been the basis of traditional planning, design, and investment for decades.

The emergence of increasing numbers of EGs connections that can alternate between requiring load from the distribution network and exporting load into the distribution network (i.e. EGs can operate as both positive and negative 'loads') at diverse points within the network, complicates both load-flows and capacity planning. Moreover, where the output of embedded generation is large enough to significantly influence the normal load-flows (in some cases even reverse them) there are additional technical issues that need to be addressed, particularly with respect to protection and voltage regulation.

Ability for EG to mitigate or defer network investment

There is a common view that embedded generation represents a significant opportunity to mitigate or defer network investment and/or provide enhanced reliability improvements. As outlined in Ausgrid's submission as part of the AEMC's current review relating to Demand Side Participation, there are a number of factors that impact on the value of EG to deliver distribution network benefits.

The distribution network is nevertheless required to supply customers in the situations when the generator is not operating. This means that the network still has to maintain the capacity that the embedded generation is supposed to provide.

As the mass scale of embedded generation is still in its infancy, it is not yet subject to the same reliability and security standards as the distribution network. Therefore, it is difficult to assess the availability and overall impact of embedded generators on reliability and security, particularly during a significant grid or network fault. As the numbers of embedded generators increases and as more data becomes available and contractual arrangements mature, the ability to aggregate and use EG to defer substantial network investment will become more feasible.


Yours sincerely

Peter Birk
Executive General Manager System Planning and Regulation