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31 March 2006

Renewable and Distributed Generation Working Group Secretariat
Ministerial Council on Energy
MCE Secretariat
GPO Box 9639
CANBERRA ACT 2601
Email: rdgwgsecretariat@industry.gov.au

Dear Working Group,

Re: Discussion Paper – Impediments to the Uptake of Renewable and Distributed Energy

Total Environment Centre (TEC) is pleased to be able to comment on this discussion paper, and we commend the Renewable and Distributed Generation Working Group on its coverage of the barriers to renewable and distributed generation. We support the introductory statements that, "Increased uptake of renewable and distributed generation (R&DG) has the potential to deliver a range of important benefits ... However, the emergence of new R&DG technologies ... presents a range of challenges in optimally developing Australia's R&DG base." (p 5)

Renewable and distributed generation provides a range of benefits that are not currently recognised in the NEM. These benefits include:

- reduced greenhouse gas emissions, because of the form of energy and from reduced transmission losses (DG)
- improved supply reliability through generation diversity
- reduced greenhouse gas emission costs
- improved power quality and reduced power losses because of generation closer to customers
- avoided network augmentation costs.

To recognise these benefits and rectify this imbalance, barriers to renewable and distributed generation should, as a minimum, be removed and preferential treatment should be facilitated. In particular, networks should adapt to increased proportions of wind energy rather treating wind energy as a technical problem.

TEC has joined with other environment groups – under the banner of the Climate Action Network of Australia (CANA) – in commenting on the Draft Code of Practice for Embedded Generation (COPEG), also submitted today. The draft Code does go some way towards designing clear, standardised provisions for connection of small/embedded generators into the network system.

Many of the comments in the joint submission to the code are relevant to this discussion paper on impediments (see Attachment A). In addition, it is difficult here to make generalised comment about distribution network issues in general since there

is not yet a firm framework. TEC has previously presented a submission on the transfer of distribution and retail functions (see Attachment B) and there is considerable duplication across these documents.

Since the main forms of renewable energy are generally embedded within the distribution network, the impediments to their uptake are also generally congruent with those applying to embedded generation (EG). Our main concerns in this area are:

- A major impediment is the connection costs paid by embedded generators – the accepted standard is for major generators to pay shallow connection costs, but embedded generators may be expected to pay deep connection costs (that is, for upgrades to the system overall) even when they may be making only a minor contribution to the total load.

- Avoided transmission and distribution use of system charges must be awarded to embedded generators where appropriate, not just "if requested" as is suggested in the draft COPEG.

- Where a renewable energy source/generator is being proposed and substantial network augmentation is necessary, alternative arrangements should be made at a national level or NEM-wide for funding the augmentation rather than the network service provider or the generator footing the bill.

- Advanced interval meters with remote communication capabilities should be installed across the National Electricity Market (NEM), with the rollout beginning by 2007. The benefits for demand management and cost-reflective pricing are sufficiently clear to justify the costs. In conjunction with this, a standardised scheme should be developed for tariffs across the NEM to ensure transparent time-of-use pricing. The details could be tailored to meet local demand/climatic conditions.

- To date, lack of information has proved a significant barrier within the NEM, both in terms of accountability of the regulator and restriction of entry by competitors (such as DM providers and embedded generators). Some of the recommendations in the draft COPEG assist with this problem, but fall short of removing this impediment. For instance, standard connection agreements should be developed by each distributor, and all standardised documents should be made publicly ad readily available.

- The CANA COPEG submission provides for an extra category of generators in the draft COPEG – Mini Embedded Generators (EG) – to include generators between 5kW and 100kW. These should be covered by the standard arrangements recommended for Micro EG. It also recommends modifying the definition of Micro EG to include generators up to 5kW (instead of 2kW). This would expedite their connection into the distribution network.

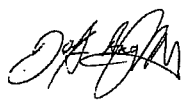
- A balance needs to be struck to allow smaller generators, particularly those involving renewable energy sources, easy access to the system, while ensuring that fossil fuel generators remote from the load points contribute to the true costs of providing network services.

- The deferred implementation of the Code, due to its subservience to current jurisdictional arrangements, will only perpetuate existing impediments. The

final COPEG should be prescribed through the National Electricity Rules and, in the meantime, the jurisdictions should be required to expedite its adoption by applying it to all new connections, while being encouraged to modify or remove conflicting legislation once the Code is formally adopted at the national level.

For further detail, we refer the MCE to the attached submissions on the draft COPEG and the framework for distribution and retail.

Yours faithfully,



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TOTAL ENVIRONMENT CENTRE

Moreland Energy Foundation

CLIMATE ACTION NETWORK AUSTRALIA

ATA

Arid Lands Environment Centre

Environment Victoria

GREENPEACE

Environment Centre NT

Nature Conservation Council of NSW

Friends of the Earth

30 March, 2006

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Submission on the Draft Code of Practice for Embedded Generation

Attention: Renewable and Distributed Generation Working Group Secretariat

Please find attached a submission on the Draft National Code of Practice for Embedded Generation and the accompanying Consultation Paper on behalf of the above environment groups, all of which are members of the Climate Action Network Australia.

Climate Action Network Australia (CANA) is an alliance of over 30 groups concerned about global warming. They come from the health, community development and environmental movements, as well

as the research community. CANA, in turn, belongs to the global Climate Action Network (CAN) which has representative groups in more than 70 nations from every continent of the globe.

CANA welcomes the development of a National Code of Practice for Embedded Generation in order to provide greater clarity and uniform arrangement for proponents of distributed or embedded generation (EG), and the opportunity to comment on the draft Code. EG has a critical role to play in supplying Australia's electricity demand with significant economic, environmental and social benefits in contrast to large, centralised forms of generation.

The potential benefits and advantages of embedded generation include:

- improved supply reliability through generation diversity;
- greater individual and community control over energy sources;
- reduced dependence on a small number of large remotely located generators;
- generation closer to customers resulting in improved power quality and reduced power losses;
- reduced greenhouse gas emissions resulting from reduced transmission losses;
- reduced greenhouse gas emissions due to the potential for greater output from renewable energy sources;
- avoided network augmentation costs;
- more efficient network tariffs;
- improved employment opportunities, with small-scale renewable projects providing more jobs per MWh of electricity produced than conventional energy sources; and
- the ability to more efficiently provide electricity at times of peak demand (in the case of solar photovoltaics, due to localised generation output matching times of peak demand).

Whilst Embedded Generation has the potential offer these significant benefits, CANA recognises that in order to fully realise some of these, a considered and thorough Demand-Side Management (DM) programme should also be adopted. DM may include initiatives such as load shifting, cogeneration, standby generation, interruptible customer contracts, fuel switching, etc. CANA strongly encourages the SCO and MCE to consider the potential interplay and mutual benefits between DM and EG. Demand-side response is an essential ingredient in any sensible and efficient energy supply scenario, and should be part of an integrated system for the full realisation of the above-listed benefits.

CANA believes the Distribution Network Services Providers (DNSPs) should be required to seek both Embedded Generation and Demand Management solutions to network constraints before considering network augmentation. This should be done by issuing a standard offer as opposed to a Request for Proposal (RFP). The issuing of a standard offer would be advantageous for smaller EG and new entrants to the market by reducing complexity and removing the competitive advantage enjoyed by incumbent and larger participants.

CANA is broadly supportive of many of the initiatives contained within the draft Code, including the recognition of differing requirements, and accompanying diverse arrangements, for EG of different capacity; the move towards published standard connection agreements, particularly for micro EG; the requirement of the Distribution Network Service Provider (Distributor) to offer connection; the requirement for preliminary discussion before agreement; and set timelines for connection.

CANA holds some concerns surrounding the deferred implementation of the Code, due to its subservience to jurisdictional arrangements in the current regulatory environment. Whilst CANA is aware of the move towards a national regulatory framework for the electricity industry, and we understand the legal requirement to defer to jurisdictional mechanisms at present, we would strongly encourage the MCE to continue the shift towards a national regulatory regime so that the full benefits of this Code can be achieved.

It is worth noting that the National Electricity Market came into being in 1998, and whilst CANA acknowledges the MCE's current work on the development of a national framework for distribution and retail regulation, we believe that prescribed rules and regulation for Embedded Generation are long overdue. CANA would welcome the Code of Practice for Embedded Generation being prescribed through the National Electricity Rules, and encourage the MCE to ensure that this happens in a timely manner. In the meantime, the jurisdictional regulators should be required to expedite the adoption of the final version of the Code by applying it to all new connections, and they should be encouraged to modify or remove conflicting legislation once the Code is formally adopted at the national level.

Further, CANA would encourage the development of a broader framework and policy environment which is supportive of EG and other environmentally beneficial initiatives. This should include:

- increasing the Mandatory Renewable Energy Target to 10% by 2010, and at least 20% by 2020;
- the modification of the NEM objective to incorporate environmental sustainability as a tenet;
- the ratification of the Kyoto Protocol and legislated greenhouse gas emission reduction targets of at least 20% by 2020 and 60% by 2050;
- the adoption of a national emissions trading scheme;
- electricity load limits and adoption of an extensive demand management regime, including generous incentives to encourage cost-effective network DM should be developed. DNSPs should be required to earmark a specific minimum spending level for DM: between 10% and 25% of the projected network capital expenditure should be set aside for cost-effective DM projects, on "use it or lose it" terms; and
- a National Energy Savings Fund should be established, with a start-up of $700 million over 5 years as a minimum.

This submission is structured in alignment with the draft Code, using section and clause numbers where relevant, with comment on the Consultation Paper included where relevant.

Specific Response and Recommendations

1. CONTEXT AND GOVERNANCE OF THE CODE OF PRACTICE

1.2 Relationship and Interaction with Other Regulatory Instruments

Whilst the draft Code provides a positive mechanism for clarifying and simplifying arrangements between Embedded Generation (EG) proponents and Distribution Network Service Providers (Distributors), some distance still exists between a finalised Code of Practice and such a Code being effective. This is due in large part to the current jurisdiction-based regulatory arrangements of the National Electricity Market (NEM). The draft Code perpetuates these present arrangements.

The Code's commencement being at a time determined by the relevant jurisdictional regulator, and the legal status of the code to be determined by each jurisdiction, places significant limits on the effectiveness of the Code. CANA would encourage the MCE to mandate the Code across the NEM, as discussed above, to ensure that the extensive and significant benefits of this regulation can be reached.

Recommendation:

The Code should require:

- **Jurisdictions to expedite the adoption of the final version of the Code by applying it to all new connections**

The Code should encourage:

- **Jurisdictions to modify or remove conflicting legislation once the Code is formally adopted at the national level.**

1.7 EG Unit Size Definitions

CANA welcomes the division of EG into various classification bands in order to apply appropriate commercial and technical arrangements to various technologies and applications. The simplified arrangements outlined in the Code for Micro EG, where negligible impact on the distribution system and NEM as a whole will be felt, is an appropriate development.

However CANA feels that the classification band defined as Small EG (between 2kW and 1MW) is too broad. Whist recognising EG applications at the upper end of this band have differing requirements to those classified as Micro EG (less than 2kW), CANA believes that EG units at the lower end of this range are unnecessarily regulated. The average size of domestic grid-interactive solar electricity systems is in the order of 1.6kW, with larger applications being up to 2.5kW. Additionally, with the advent of technological advances in domestic-scale renewable technology, including the potential advent of fuel cells, the 2kW limit on Micro EG appears insufficient to capture the domestic market that this category is obviously designed to cater for.

With the peak electricity demand of a domestic dwelling being in the order of 5kW, and hence the physical infrastructure capable of transmitting these loads, CANA believes that increasing the limit of Micro EG to 5 kW would be appropriate.

Further, the Consultation Paper states that variation in connection arrangements and processes between the Small and Micro categories is due to additional requirements for EG at the upper end of this range (IE: closer to 1MW). Given that most small businesses would have a maximum electricity consumption rating under 100kW, and the increase of applications such as micro-cogeneration units in

the order of 30kW targeted at these businesses, it would seem sensible to have a fifth level of classification to cater for this market.

CANA would recommend implementing an additional category, entitled 'Mini EG', which would cater for units between 5kW and 100kW. Thus the Small EG category would then cover the range from 100kW to 1MW. This is based on the understanding that EG units of up to 100kW in size:

- should require little additional network augmentation;
- can be connected directly to the distribution network;
- are generally comprised of mass-produced, over-the-counter components built to industry standards;
- primarily provide supply to the residential and commercial premises in which they are installed; and
- are generally proposed by new entrants with relatively un-sophisticated understanding of the National Electricity Market.

The commercial, technical and regulatory arrangements for each of these four categories recommended by CANA are outlined further below. The fifth category of EG, Large EG, is already catered for by the National Electricity Rules.

Recommendation

The Code should specify:

- **Four categories of EG, as follows:**
  - **Micro EG – up to 5kW**
  - **Mini EG – between 5kW and 100kW**
  - **Small EG – between 100kW and 1MW**
  - **Medium EG – between 1MW and 5MW**

2. ARRANGEMENTS FOR CONNECTION

Whilst CANA appreciates the attempt of the draft Code to provide clarity, much of the language used in this section is vague and unspecific. Terms such as "fair and reasonable", "in good faith", "where possible", "reasonable opportunity", "reasonable endeavours" and "where practicable" litter this section of the draft Code, providing little certainty and security for EG proponents, particularly as all of these instances apply to requirements on the Distributor.

CANA would recommend the use of more specific and binding terminology throughout this section, and all aspects of the Code, in order to provide the clarity, certainty and uniformity the Code sets out to provide.

Further, throughout the document the draft Code requires the Distributor to "publish" documentation and standard agreements with little definition as to what is meant by this. CANA would suggest that this phrase be replaced with "develop and make publicly (and readily) available", as used in the draft code section *2.3.2 Application to Connect* (p. 13).

2.2 Requirements for the Connection of Embedded Generation

2.2.2 Provision of Information

CANA recommends that the requirement for Distributors to develop and make publicly (and readily) available comprehensive information pertaining to connection be extended from the Micro EG classification band to the suggested Mini EG band, thus including all EG up to 100kW. CANA strongly

believes that the potential for growth in embedded generation applications in this classification band should be encouraged, with clear, standard information and less onerous regulations than for larger EG (greater than 100kW).

Recommendation

The Code should require:

- **Distributors to make publicly and readily available comprehensive information pertaining to connection for both the Micro EG and Mini EG classification band**

2.3 The Connection Process

A number of discrepancies exist between the Draft Code and the Consultation Paper in this section. The discrepancies predominantly relate to the level of requirement for the Distributor to provide information to the proponent, with some proposed timelines also differing between the two documents.

The Consultation Paper states categorically that the development and publication of both a standard connection agreement and a standard application for connection form be compulsory for both Micro EG and Small EG (p. 27 & p. 37). However, in the draft Code both of these documents become recommended "where practicable and using reasonable endeavours" (*2.3.2 Application to Connect; 2.3.3 Connection Offer;* and *2.3.4 Connection Agreement*).

Additionally, the Consultation Paper states that the Distributor must issue a Connection Agreement within 20 business days for both Micro EG and Small EG (p. 27), whereas the draft Code specifies 3 months as appropriate for Small EG (*2.3.4 Connection Agreement*). Such incongruities between the two documents are unfortunate and confusing. For the purpose of this submission, CANA has chosen to focus on the requirements and timelines outlined in the draft Code, with reference to the Consultation Paper only where necessary.

CANA's responses to the following clauses generally tend to group Micro EG and Mini EG together (up to 100kW), for reasons discussed above. The technical and regulatory requirements for units much larger than 100kW start becoming more complex and sophisticated and, as such, require greater levels of regulatory control and flexibility, as outlined below.

2.3.1 Connection Enquiry and Preliminary Discussions

CANA supports the draft Code in the application of a standard connection application form as the connection enquiry for EG connecting with a standard connection agreement. However, this provision should be extended from Micro EG to Mini EG (IE: EG up to 100kW), which is a compromise between what is outlined in the Consultation Paper and that in the draft Code. This would provide greater certainty for proponents of domestic and small-commercial scale embedded generation units. Where standard documents exist, these should be given to the proponent at the Preliminary Discussion to give them a clearer picture of what may be required of them.

2.3.2 Application to Connect

For units prescribed as Micro EG and Mini EG, the submission of a standard connection application form would satisfy the requirements of a preliminary enquiry and an application to connect. In addition, CANA believes that Distributors should endeavour to provide standard connection application forms for both Small EG and Medium EG.

2.3.3 Connection Offer

CANA believes that the terms for Micro EG and Mini EG should again be consistent, with 20 business days a suitable time frame for a connection offer to be made by a Distributor. CANA accepts the 3 month time frame for larger applications.

2.3.4 Connection Agreement
CANA encourages the MCE to adopt standard connection agreements for all EG, with variation on the content as is appropriate for the size of the development. Such agreements should be made public and readily available, as per the recommendations in the draft Code. This would provide greater certainty and clarity for proponents of EG, helping to further develop the industry.

2.3.5 Costs
This clause is addressed in CANA's recommendations on Commercial Arrangements, below.

2.3.6 Timeframes
CANA recommends the proposed timelines established in the draft Code be adopted as follows:

- Table 2.1 – Connection Process Timeframe for Small EG and Medium EG – remain as is.
- Table 2.2 – Connection Process Timeframe for Micro EG – extend to include Mini EG.

This would give rise to two separate time frames: one for EG units below 100kW, and another for units between 100kW and 5MW. CANA strongly believes that this is a suitable point at which extra considerations need to be taken into account, and a more complex connection process, regulatory framework and lengthy timeframe be employed.

Recommendation:
The Code should require:

- **Distributors to provide standard connection application forms for Micro EG and Mini EG**
- **Distributors to accept the submission of these forms as the connection enquiry for EG connecting with a standard connection agreement**
- **Distributors to provide a connection offer to Micro EG and Mini EG within 20 business days**
- **Standard connection agreements for all EG**
- **Standard documentation to be passed to proponents at the Preliminary Discussion**

The Code should stipulate:

- **Two separate timeframes for connection, based on the Tables published in the draft Code, with the following applied:**
  - **Table 2.1 - Connection Process Timeframe for Small EG and Medium EG**
  - **Table 2.2 – Connection Process Timeframe for Micro EG and Mini EG**

3. TECHNICAL REQUIREMENTS

CANA accepts the technical requirements set out in the draft Code, with the addition of a clause for the proposed Mini EG classification band, as follows:

> ***3.3 Mini EG***
> *The Distributor must develop and make publicly (and readily) available a standard connection agreement for Mini EG which must include the technical requirements for connection of the EG unit.*
>
> *The standard connection agreement for Mini EG must not include any technical requirements specific to the generation or export of electricity, except where failing*

to implement such additional technical requirements would prevent the Distributor from complying with its statutory or licence obligations.

In inserting this clause for the additional Mini EG category, this section of the Code will be in alignment with CANA's other recommendations outlined above, as well as being consistent with the intention of the Consultation Paper for the lower range of Small EG (p. 34).

Recommendation

The Code should include:

- **An additional clause, entitled Mini EG, with the above-mentioned content**

3.6 Metering Requirements

CANA believes that metrology procedures should be nationally uniform and regulated to allow consistency for all parties. Furthermore, a standardised system of interval metering should be installed across the NEM. The metering system should be based on the best available, which currently is advanced interval meters ("smart" meters), that is, meters which have remote communications capabilities. Such meters would satisfy the requirement outlined in the draft Code of being able to measure import and export separately. CANA advocates the installation of advanced interval meters for all new domestic dwellings, all meter change-over situations (including the installation of EG) and the progressive roll-out across the NEM.

In addition, smart meters are vital in the successful implementation of Demand Management strategies across the National Electricity Market. They provide the additional benefits of[1]:

- avoided capital costs of new generation and network capacity;
- avoided variable costs of energy generation;
- avoided manual meter reading costs;
- improved operational network management including near real-time measurement of network losses;
- reduced greenhouse gas emissions from a reduction in peak demand (where there is not a shift in consumption to more emission intensive generation at another time of day);
- increased settlement accuracy;
- pricing flexibility and accuracy;
- fraud detection;
- opportunity for load control technologies;
- opportunity to integrate electricity metering with gas and water;
- remote connection and disconnection capability; and
- premise outage detection and event record and communication

As the potential economic, environmental and social benefits of such smart metering in the longer term are extensive, and the gradual roll-out of smart meters across the NEM advocated, CANA would recommend the costs for the meters be absorbed by the NEM. The calculation of potential savings to the various participants in the market could be used as for allocating charges to cover the initial costs of their installation across the market.

Recommendation

The Code should require:

[1] User Participation Working Group, *Common Principles for the Assessment of Interval Meters: Overview paper*, Report to the Ministerial Council on Energy Standing Committee of Officials, June 2005, pp 7-8

- **The adoption of advanced interval meters for all EG installations**
- **The cost of the installation of advanced interval meters be absorbed by the NEM**

4. COMMERCIAL ARRANGEMENTS

4.2 Network Charges

CANA accepts the principle contained within the draft Code for EG proponents to pay for dedicated assets, as well as any extension costs related to their direct connection to the distribution network. This is in line with the National Electricity Rules and existing arrangements with present generators. However significant concerns arise surrounding the draft Code's proposals for the inappropriate allocation of network augmentation to EG. The draft Code penalises proponents of EG by expecting them to pay for more than specific connection costs. That is, they are inappropriately required to subsidise the existing transmission and distribution networks by paying deep connection costs, in contrast to established (large) generators that are paying only shallow connection costs. This approach ignores the direct and indirect benefits that EG provides, listed earlier.

A balance needs to be struck to allow smaller generators easy access to the system, while providing for large generators remote from the load points to contribute to the true costs of providing transmission and distribution network services.

4.2.3 Network Augmentation Costs

The current system allows for new, large generators to pay only shallow connection costs, that is, to cover the costs of assets directly required by a new connection. This applies equally to large, remote generators as to those situated closer to load points. However the draft Code proposes levying charges on EG proponents for any distribution network augmentation required as a result of the additional load generated by the EG (deep connection costs). This contravenes the general principle and precedence of paying shallow costs and, moreover, the spirit of "open access" the NEM is based on. It also ignores the EG benefits of improved supply reliability through generation diversity, improved local power quality, reduced losses and reduced greenhouse gas emissions.

There would be some argument for charging generators for more than just the costs associated with their connection into the system if there were no established network system, as there would be no conduit for the generators to sell their product. What is particularly inappropriate, however, is the differential in charging for major generators and embedded generators.

The most satisfactory and equitable arrangement – to honour the spirit of open access – would be for deep connection costs to apply only to large generators entering the system. If the NEM is truly designed to assist the entry of a variety of types of energy and participants, then small and/or local generators should not be expected to foot the bill for supporting large, remote generators which are usually powered by fossil fuels. It is manifestly unreasonable to force a small, local generator to pay the full extent of deep connection costs when it may only be adding a minor extra load to the network, or in fact reducing load. The new Amendments to Chapter 2 of the Electricity Distribution Code in South Australia acknowledge this[2].

Recommendation

The Code should require:

- **Only 'shallow', or dedicated, connection costs to be levied against EG proponents**

[2] Essential Services Commission of South Australia, *Amendments to Chapter 2 of the Electricity Distribution Code: Connection of Embedded Generation Units*, June 2005

- **Any system augmentation costs to be covered entirely by large generators within the scope of the National Electricity Rules**

4.4 Payments to EG

CANA welcomes the acknowledgement of the economic benefits of EG through the proposal to award EG proponents financial payments for network support services. However some concerns exist surrounding the arrangements for payments to EG as outlined in the draft Code.

4.4.1 Payments to EG in Respect of Distribution Network Deferral Benefits

CANA strongly objects to the wording and direction of this clause. Whilst we support EG being adequately reimbursed for network deferral benefits, we believe that these payments should be mandated, not just provided on request.

The result of such a provision as it currently stands in the draft Code would be to discriminate against smaller and new entrants to the EG market who may have a less-sophisticated understanding of the operation of the NEM and less ability to negotiate with a large, monopoly network provider. Whilst such avoided network costs may be small for Micro EG, CANA recommends the mandatory calculation, disclosure and payment of such costs for all Mini, Small and Medium EG

4.4.2 Payments to EG for Network Support Services

CANA supports the outlined requirement in the draft Code for the Distributor to calculate and provide details in a connection offer of any network support service provided by an EG unit. However there is no guidance or stipulation, other than in the wording of the clause heading, for any payment or reimbursement to be made in recognition of this service. CANA recommends the transparent establishment of detailed guidelines for the determination of payments for Network Support Services and the clarification of this clause in the final Code.

4.4.3 Payments for avoided transmission use of system usage charges

As with clause 4.4.1, CANA believes payments for avoided Transmission Use of System (TUoS) charges should be paid as a matter of course to the EG proponent, rather than "if requested" as currently proposed in the draft Code. This should be mandated in any future Code.

TUoS rebates are intended to recompense local generators requiring lower or no use of the transmission network – and hence lower usage charges for transmission networks – by virtue of location closer to load points. However, EG offers a range of benefits not entirely reflected in the current method of calculating avoided TUoS rebates. In particular, embedded generation offers value to a TNSP through its potential to enable the deferral of new transmission augmentation. The value of TUoS rebates should include the value of deferral of new network augmentations, which should be calculated with reference to the following:

- Annual operating cost of the deferred augmentation;
- Total annual net cost of servicing the capital expenditure of the deferred augmentation including:
    - financing charges; and
    - capital depreciation.

As stated in the Australian Energy Market Commissions *Review of the Electricity Transmission Revenue and Pricing Rules* Issue Paper, "It follows that to the extent embedded generators help avoid or delay transmission augmentation, they receive a rebate based on the long run marginal value of

their contribution."[3] Including the full value of deferral of network augmentations in the calculation of TUoS rebates would provide more accurate price signals across the NEM. Such an approach would also encourage Transmission Network Service Providers (TNSPs) to more fully utilise the benefits of non-network solutions, by making the true costs – and long run costs – more transparent since it also presents an opportunity for recognition of long-term effects.

4.4.4 Payments to EG for Other Services

The payments outlined above do not fully recognise the benefits that EG offers to the overall system or to the wider community. Currently excluded are the benefits of improved supply reliability through generation diversity, improved local power quality, reduced losses and reduced greenhouse gas emissions. These benefits should be recognised through appropriate payments to EG proponents. This would reduce the presence of positive externalities and reduce the occurrence of market failure.

Recommendations

The Code should require:

- **The calculation, disclosure and distribution of all payments to Mini EG, Small EG and Medium EG**
- **The calculation of the full benefits of avoided transmission network augmentations, and that they be passed on to EG proponents**
- **Standard templates for the calculation of all payments to EG**
- **The calculation of and payment for the benefits of improved supply reliability through generation diversity, improved local power quality, reduced losses and reduced greenhouse gas emissions that EG provides.**

4.5 Reimbursement of Network Charges

CANA supports the reimbursement of network charges to initial proponents of EG for expenses paid in relation to connection assets, following the connection of a second and subsequent EG to the shared connection infrastructure. However, the wording of this clause does not mandate such a payment; just the publication of policies and procedures for dealing with shared network connections.

Recommendation

The Code should require:

- **The reimbursement of network charges to EG owners for shared connection assets.**

[3] Australian Energy Market Commission, *Review of the Electricity Transmission Revenue and Pricing Rules – Transmission Pricing: Issues Paper*, November 2005, p 29