5 February 2016

Mr Hayden Green
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

By electronic lodgement

Dear Mr Green

ERC0191 – National Electricity Amendment (Local Generation Network Credits) Rule 2015

Origin Energy (Origin) welcomes this opportunity to comment on the Australian Energy Market Commission's (AEMC) consultation paper on amendments to the National Electricity Rules (NER) proposed by the City of Sydney, Total Environment Centre and the Property Council of Australia (the proponents).

Origin supports the aim of reducing network investment by incentivising peak demand reduction, however Origin is unable to support the proposed rule change as:

- It would likely result in an increase in electricity costs for customers which would outweigh the benefits that may accrue to participating generators.
- Networks have not indicated that there is a benefit they can quantify from most small scale embedded generators
- It would duplicate existing incentives and support provided to embedded generation
- It will involve a high level of complexity and adminstrative cost relative to the benefit.
- There is limited potential to reduce network augmentation costs given modest network augmentation plans and the limited impact an LGNC would have on most embedded generation investment decisions.

Avoided costs

The proposed rule change assumes that in the presence of a diverse portfolio of local embedded generation, avoided network costs can be captured due to reduced investment in capacity on the distribution network. However the demand forecasts used by distribution network service providers (DNSPs) when planning network augmentations incorporate expected increases in small scale embedded generation. The inclusion of small embedded generation in demand forecasts is scrutinised by the AER and affects the DNSP's revenue allowance approved by the AER. Accordingly, the avoided cost of constructing network infrastructure due to small scale embedded generation is likely to already be largely factored into network investment plans and revenue determinations.

Origin has yet to be advised by any DNSP that there is a material network benefit in deploying small scale embedded generation. Indeed Origin's experience has been that in many network areas DNSPs are concerned about the cost impact on their network. While Origin has little basis on which to assess these views, this is a critical point in assessing the merits of the proposed rule change. If networks are unable to verify that cost reductions will be delivered there is likely to be little merit in implementation.

Because of this, the proposed rule change has the potential to increase the cost of delivered electricity to customers without embedded generation or at generation sites unable to access a LGNC. The

proposed rule is therefore more likely to deliver a wealth transfer than a net consumer benefit as required for a rule change to meet the National Electricity Objective (NEO).

Other demand side management initiatives

Many of the Power of Choice reforms and the implementation of cost reflective network tariffs are designed to more appropriately signal the value of peak period demand. With many of these initiatives still to be implemented Origin believes further time is required to properly assess the merit of further reforms such as the LGNC. Given the large number of existing provisions in the NER that support efficient investment in embedded generation, Origin does not believe it is appropriate at this time to make further changes to the NER until the efficacy of recent reforms are tested. Assumptions made in the rule change proposal about the impact of cost-reflective pricing for example cannot be validated until such changes are implemented and consumers and industry gain experience of their application. The rule change proposal, or even a more preferable rule if made, will further add to the crowded reform and implementation task confronting the market over the next three years.

The current NER allows networks to incentivise embedded generation investment through tariffs that reward export at peak times. The limited application of this tariff appears to reflect the Network's view that there is little network benefit to be derived from incentivising further small scale embedded generation.

Calculation and administration

A location specific method of calculating LGNCs would be expensive to administer and communicate to generators and does not add materially to existing demand side management incentives. It would result in higher use of system charges for small and large customers in a particular location. At the same time, a system-wide LGNC would likely reward generators that have no prospect of reducing network investment as they may be located in regions with excess capacity.

In addition, the complexity of network billing files will increase, requiring both retailers and DNSPs to alter the structure of network billing files in their systems to account for the introduction of a potentially large number of specific LGNCs

Market Environment

DNSPs have undergone significant capital expenditure programs in the past decade and have expressed little expectation over the coming regulatory period for network augmentation beyond addressing isolated pockets of load growth. As a result, the value of any deferral will be low and localised. The existing rules encourage networks to promote embedded generation and other DSM measures to relief localised constraints. The proposed broad application of an LGNC is not well suited to this task as for the most part it will reward generation in areas not requiring network investment.

The market for embedded generation is very strong at present, with solar PV in particular responding well to market signals, evidenced by continued high levels of investment in this technology. This particular embedded generation technology would be unlikely to attract a material LNGC given the poor correlation between solar output and its intermittency and peak demand on distribution networks. Despite this, the proposed rule would apply a single LGNC irrespective of the contribution embedded generators make to avoided long-run costs of electricity distribution assets.

Closing

While Origin acknowledges the consideration and effort of the proponents in preparing the rule change request, we do not think it is required at this time, nor is a more preferable rule likely to deliver net benefits. The existence of private wires and the incentives to invest in them already takes place in the

embedded network segment of the market and only occurs where there are commercial drivers to invest in such infrastructure.

Origin is concerned that the proposal will result in net increases in costs to electricity consumers (particularly small consumers) and that larger embedded generators should be the focus and these projects can access a range of demand-side management initiatives catered for in the rules already (as set out in the consultation paper on pages 6-8).

The degree of precision to calculate a LGNC that would address localised constraints will result in administrative burdens and uncertainty that would render net benefits unlikely in many cases. As the AEMC's paper notes there is nothing to prevent a network from encouraging embedded generation investment through tariffs that reward export at peak time if the networks believe there to be a net benefit in this approach. Origin notes that the ISF is completing a trial aimed at quantifying the potential net benefit to generators from an LGNC, Origin encourages the AEMC to engage with the ISF to understand their estimate of benefits/scheme costs.

Ultimately, Origin does not believe that the proposed rule is consistent with the NEO. The purpose of the NEO is to promote regulation that encourages the most efficient investment decisions to the benefit of consumers. A rule change that confers a private benefit to some parties whilst excluding them of the costs of those decisions will not produce efficient investment. The proposed rule does this by providing some embedded generators with a credit but shields them from the consequences of their investment decision where it increases costs and is therefore inefficient. Accordingly, Origin does not support the proposed rule because it will direct inefficient investment that is not in the long term interests of all consumers.

Origin responds to specific questions set out in the consultation paper below. We would welcome further discussion with the AEMC on this response. In the first instance, please contact David Calder on (03) 8665 7712.

Yours sincerely

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Questions for consultation

Question 1 Assessment Framework

1. Would the proposed framework allow the Commission to appropriately assess whether the rule change request can meet the NEO?
2. What is the relevance, if any, of reliability and security for the purposes of assessing the proposed rule (or a more preferable rule)?
3. What changes, if any, to the proposed assessment framework do you consider appropriate?

Origin supports the proposed framework set out in the consultation paper. An accurate calculation of long-run network costs and operating costs, particularly on a localised basis, may be difficult to determine due to the inevitable uncertainty of future grid costs (say for example, for period longer than the period that a revenue or price cap applies to, usually five years).

Reliability and security is relevant to the assessment of the proposed or a more preferable rule as uptake of embedded generation can detract, as much as contribute to network performance. The LGNC may encourage generation that could be placed in areas of the network where it is not required, worsening performance and increasing network costs. This would not be consistent with the NEO, with respect to reliability and security of supply grounds in the first instance and secondly in relation to price and quality of supply to small customers.

Origin believes that existing provisions within the NER are adequate to encourage efficient levels of investment in embedded generation. Therefore, a more preferable rule is unlikely to be required without confidence in demonstrable net benefits that it may provide.

Question 2 Perceived issue with the NER

1. Are the current NER provisions (including change that have been made but not yet come into effect) likely to provide appropriate price signals for efficient embedded generation? That is, do the NER provide incentives to individually or collectively (including through small generation aggregators) invest in and operate embedded generation assets in a way that will reduce total long-run costs of the electricity system?
2. Do the current NER provisions (including changes that have been made but not yet come into effect) appropriately incentivise network businesses to adopt both network and non-network solutions to achieve efficient investment in, and operation of, the electricity system that minimises long-term costs?
3. If your answer to questions 1 and 2 is ‘no’, what is the specific area in which the current NER provisions do no achieve these outcomes – for example, is the issue with the current provisions only related to embedded generator of a certain type or below a certain size, or is there an issue for all embedded generators?

Origin believes that a combination of existing programs and yet to be implemented rule changes provide sufficient incentives for investment in efficient embedded generation. We consider that recent changes to the NER and new rules supporting network tariff reform and competition in metering require time to measure their impact on the electricity market more generally and how investment in embedded generation and storage are impacted. Until evidence that the substantial changes yet to be implemented and recent changes still being explored are inadequate, we do not believe there is reason enough to consider yet another rule change impacting on demand side management and participation.

It is important to distinguish between large and small generators as the motivations to invest in different technologies and at a particular scale will vary considerably. A single LNGC is not likely to encourage investment on an efficient basis to disparate technologies and embedded generator sizes. For small customers (installing solar PV for example), avoided cost will be an important consideration. It is not likely that a LGNC if appropriately discounted for peak demand coincidence would be at a sufficient level to encourage small customers (even in aggregate) to export electricity in a coordinated fashion to meet a potential network constraint. Price signals for small customers via cost-reflective tariffs will do more to signal the appropriateness of investment in small embedded generation more than that provided by a LGNC, which will necessarily be muted in its impact if not set at a very local level (which in turn would be expensive to calculate and administer).

Question 3 Determining avoided costs

1. What are the factors that influence the long-run network costs that can be avoided through embedded generation? For example, do these cost savings depend on the location, voltage and type of generation?
2. Can embedded generation materially reduce DNSP's ongoing operating and maintenance expenditure? If so, to what extent do these cost savings depend on the location, voltage and type of generation?

Minimising long-run network costs through embedded generation is likely to be best achieved at specific geographic areas. Type of generation will be a factor when higher levels of reliability are sought (noting that batteries will improve the reliability characteristics of intermittent sources of energy). However, the cost of calculating and applying LGNC specific to a local area will be costly and to the extent it over-compensates embedded generators, remaining network users in the same location will pay more for electricity than otherwise would have been the case and will pay more than similar customers outside of that region.

A probabilistic discount may apply to the calculation of a LGNC to account for the intermittency of generation. For solar PV systems, this may not be appropriate as they are highly likely to share the same characteristics in the same region where a network constraint may exist. When low or no generation is occurring, all solar PV systems are likely to be behaving in the same way. On this basis, it is difficult to see how such intermittency would contribute to a material level of deferred capital expenditure by the DNSP.

There is also the concern that costs for all customers in a particular network location may increase as LGNCs are paid to embedded generators, but when they increase network costs, these are not allocated to embedded generators, but rather to all customers. This is reflective of the one-way nature of the proposal; benefits accrue to individual generators, but the costs of provisioning the LGNC are funded by all consumers in a network area. This would not be consistent with the AEMC's own assessment framework set out in section 4.2 of the consultation paper. It would also be inconsistent with the NEO because it would not encourage efficient investment that is in the long term interest of consumers.

Question 4 Specificity of calculations

If LGNCs of some form were to be introduced:

1. What is the appropriate degree of specificity in the calculation of avoided network costs and, if relevant, operation and maintenance costs? For example, should different calculations be made for different voltage levels and/or geographic locations and, if so, what would be the criteria for distinguishing between levels/locations?
2. How often should this calculation be updated, recognising that the potential network cost savings can increase and decrease significantly over time as demand patterns change and network investments are made?

As discussed above, a high degree of specificity is desirable in the context of the proposal to identify those embedded generators contributing the most to avoided or deferred investment in the network. However, the complexity involved in calculating a meaningful LGNC is high and will be costly to implement and maintain through DNSP and retailer billing systems. There is a strong likelihood that these costs will outweigh the benefits accruing to participating embedded generators. Conversely, calculating the LGNC across the entire network zone is likely to send misleading signals to some embedded generators that their output is relieving constraints when it is not, and a weak signal to those embedded generators that may be contributing to localised constraints.

An optimal period for updating the calculation of the LGNC is very difficult to identify. If the proposed rule or a preferred rule were to proceed, there would likely need to be frequent recalculation or calibration of the credit itself. This may impact on investment certainty for proponents of embedded generation given changes in patterns of use driven by independent investment in storage technologies and energy efficiency.

Question 5 Potential benefits of the proposal

1. Compared with the current NER provisions, would the proposal:

(a) Provide superior or inferior price signals to embedded generators (including small-scale embedded generators) to incentivise them to invest in and operate those assets efficiently, thereby reducing long-term total system costs?
(b) Provide superior or inferior incentives to DNSPs to adopt efficient network and non-network solutions (including small-scale embedded generation) so as to reduce long-run total system costs?
(c) Have any potential beneficial or detrimental effects on any non-price attributes of the service, such as network reliability and/or security of supply?
(d) Reduce or increase the prices consumers pay for electricity?

2. To what extent do your answers in 1(a) to (d) depend on:

(a) To whom LGNCs are applied (e.g. whether it is applied to all embedded generators or whether there are criteria based on a generator's capacity, availability and/or location?
(b) The degree of specificity in the calculation of avoided network costs (i.e. whether separate calculations are made for different voltage levels and/or locations) and how often it is updated?
(c) The proportion of the estimated avoided network costs that are reflected in the LGNCs paid to embedded generators?

3. If you do not consider that the proposed rule would enhance the NEO, are there potential alternative approaches that may do so?

Origin believes the proposal, while intended to reward embedded generation for providing support to local network constraints would ultimately not provide sufficiently precise signals to encourage efficient investment in embedded generation. The trade-off between regional and technological specificity and its cost is highly likely to result in a sub-optimal outcome whichever level of granularity is chosen.

DNSPs may be indifferent to the existence of the LGNC as its costs will be recovered from the majority of network users not party to the credit.

Just as some embedded generation may improve reliability and security of supply in the network, in other circumstances, additional generation signalled by a LGNC may cause over-voltage challenges and additional capital expenditure to support energy flows into the high-voltage distribution network. Therefore the proposal could result in both improvement and detriment to reliability and security of electricity supply.

On balance, Origin believes that the proposed rule would result in an increase in prices paid for electricity for customers. The costs of administering and funding a LGNC will be socialised across all network users, while the benefit of the credit will be captured by participating embedded generators only. To illustrate, if a LGNC resolves a network constraint, will there be decay in the quantum of the credit over a defined period? Will the avoided costs brought about by the LGNC exceed or at least be equal to the cost of calculating and administering the LGNC? In our view, the benefits of the proposed rule change are insufficient to meet the requirements of the NEO when measured against the cost to the market of making the rule.

These views are to a large extent independent of the criteria described in Question 5 2(a) to 2(c) above.

Question 6 Potential costs of design, implementation and administration

1. What changes would DNSPs and other parties need to make to their existing systems and process to enable the design, implementation and administration of LGNCs? To what extend does this depend on:

(a) To whom the LGNCs are applied (i.e. whether it is applied to all embedded generators or whether there are criteria based on a generator's capacity, availability and/or location?
(b) The degree of specificity in the calculation of avoided network costs (and, in turn LGNCs) – i.e. whether separate calculations are made for different voltage levels and/or lications?
(c) How often the calculations are updated?
(d) How often the LGNCs are to be paid?

2. What are the likely costs associated with undertaking the changes described above and how are these likely to vary depending on the factors set out in 1(a) to (d)?
3. How do these costs compare to the expected benefits of the proposed change?

As discussed above, retailers as well as distributors and the Australian Energy Market Operator will all need to update systems and processes to accommodate the payment and administration of LGNCs. For many changes to IT systems, the number of embedded generator types that a LGNC may apply to would create the same level of implementation effort and adding additional classes would not increase the complexity of the task greatly. We would stress however that the system, process and training task

would be substantial to implement LGNCs across the NEM. Origin understands that NMI standing data (LGNC tariff type), network billing systems and retail billing systems would be affected. Retailers would also need to manage the front-line communication with recipients of LGNCs. If small embedded generators are eligible for LGNCs, there will need to be significant investment contact centre training and additional resources to support customers.

The level of specificity will increase costs as a LGNC becomes more localised. This will multiply the number of network and retail tariff combinations and again, require a material investment in billing and information technology systems. Other administrative considerations (such as the treatment of the goods and services tax) would need to be accounted for.

Frequent updating of the calculated value of a LGNC may be desirable to maintain its accuracy, but again, there is a trade-off with administrative costs that greater frequency would trigger.

Origin has assumed that LGNCs would be passed through retail bills.

We have not considered the scope of the costs to implement a LGNC. Implementing a LGNC would require up-front investment in industry systems, without any recipients benefitting from the credit. These costs may manifest in increased costs of electricity without any certainty over levels of take up by embedded generators.