4 February 2016

Mr John Pierce
Chairman
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

energex
positive energy

Dear Mr Pierce

Consultation Paper: National Electricity Amendment (Local Generation Network Credits) Rule 2015 (ERC0191)

Energex Limited (Energex) appreciates the opportunity to provide a submission to the Australian Energy Market Commission (AEMC) on the Consultation Paper in relation to rule change requests proposed by the City of Sydney, Total Environment Centre and the Property Council of Australia.

Energex does not support the proposal outlined in the AEMC's Consultation Paper to introduce a payment from distribution networks to embedded generators in the form of a local generation network credit (LGNC). Whilst Energex considers embedded generation to be a valid alternative to traditional network investment options, Energex believes the existing provisions within the National Electricity Rules (NER) already provide sufficient incentives for customers to invest in efficient embedded generation. Energex's detailed response is provided as Attachment 1.

As a member of the Energy Network Association (ENA), Energex supports the ENA's submission.

Should you have any queries regarding this submission, please contact Nerida Kemp, Senior Network Regulation Strategist, on (07) 3664 4680.

Yours sincerely

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Issues for Consultation	Energex Response
Question 1: Assessment framework	
1. Would the proposed framework allow the Commission to appropriately assess whether the rule change request can meet the NEO?	Energex agrees with the AEMC that the key question to be answered is whether the NER already provides sufficient incentives for customers to invest in efficient embedded generation and for DNSPs to procure embedded generation when it is the least cost solution. Energex believes there are sufficient incentives to invest in embedded generation and for Distribution Network Service Providers (DNSPs) to consider non-network alternatives to traditional network investment as demonstrated by the existing incentive mechanisms referred to in section 2.2 of the Consultation Paper. Energex generally supports the AEMC's assessment framework set out in section 4.2 of the Consultation Paper however is concerned that the net benefits of embedded generation to the network will be difficult to demonstrate and quantify. Estimating the avoided network costs due to embedded generation is dependent on a range of factors including: the generator type, generator availability when needed, size, connection voltage and in particular location. This is likely to result in an overly complex and costly model or mechanisms with uncertain degrees of accuracy.
2. What is the relevance, if any, of reliability and security for the purposes of assessing the proposed rule (or a more preferable rule)?	Energex believes that reliability and security of supply, as components of the NEO, should be considered as part of the assessment framework. The availability of the embedded generator at times of local peak demand or network constraint is an important factor when considering the potential cost savings of embedded generation (as an alternative to traditional network investment) to ensure customers do not experience unacceptable network reliability outcomes.
3. What changes, if any, to the proposed assessment framework do you consider appropriate?	Energex considers the consistency of the proposal within the wider context of tariff reform developed as a result of the AEMC's recent Rule changes should be an additional component of the assessment framework. This will ensure cost reflective network prices are not distorted by the introduction of a LGNC.

Issues for Consultation	Energex Response
Question 2: Perceived issue with current NER	
1. Are the current NER provisions (including changes 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?	Energex believes the NER provisions sufficiently support embedded generation as demonstrated by the mechanisms referred to in section 2.2 of the Consultation Paper. In particular the following should be considered: Tariff Reform: The objectives in implementing cost reflective network tariffs are three-fold: to incentivise customers to better utilise the network; to reduce the level of cross-subsidies between customers; and to enable new technologies. Energex believes the introduction of demand tariffs and secondary load control tariffs from 2016-17 will incentivise investment in embedded generation that can be used to reduce network peak demand. Embedded generators assigned to demand based tariffs will be rewarded through lower network charges if they are able to reduce demand on the network during peak times, leading to more efficient outcomes for all customers. The use of solar PVs in conjunction with battery storage has the potential to unlock the real benefits of the proposed cost-reflective tariffs as electricity will be generated and stored for use during peak demand periods. Energex is concerned that the proposal to offer LGNC may potentially distort the pricing signals for the efficient use of the network. By potentially over-compensating embedded generators, the implementation of LGNC may encourage embedded generators to invest and operate their assets in a manner that does not reduce network costs or result in a positive outcome for all customers. RIT-T and RIT-D investment tests: Energex conducts a RIT-D test when a network augmentation investment over $5m is required at a particular location. Under this mechanism, the benefits arising from embedded generation in delaying particular network investments are identified and quantified through a cost benefit analysis study. In such cases, the DNSP may enter into a contract with an embedded generator (or multiple smaller embedded generators) to supply energy in the network where capital investment can be deferred or avoided. Energex is concerned that the proposal to offer LGNC in addition to a network support fee could result in over-compensating the embedded generator, the cost of which would be borne by all customers.

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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?	See comments in Q2.1 above. In addition, the AER's Capital Expenditure Sharing Scheme (CESS) and the Efficiency Benefit Sharing Scheme (EBSS) provide an incentive for DNSPs to operate efficiently and consider alternative solutions including substituting non-network solutions for a previously anticipated network investment, if the former is more efficient.
3. If your answer to questions 1 or 2 is 'no', what is the specific area in which the current NER provisions do not achieve these outcomes – for example, is the issue with the current provisions only related to embedded generators of a certain type or below a certain size, or is there an issue for all embedded generators?	Energex believes the NER provisions sufficiently support all embedded generation.
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?	Long run network costs are influenced by network security standards, peak demand, asset utilisation, fault level, network reliability and power quality standards. Network constraints are generally locational and often limited to individual substations or feeders. The network benefit provided by embedded generation is often a function of the type of network constraint (eg thermal capacity or equipment fault level ratings), the network load profile (ie the time and duration of peak demand) and the characteristics of the embedded generator (ie availability, size, connection voltage, and location). Long run network costs can be avoided where embedded generators export at the time of peak demand in a capacity constrained location. However, embedded generation can also contribute to the long run network costs where the generator increases the system fault level above equipment ratings or causes power quality issues impacting other customers.

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2. Can embedded generation materially reduce DNSPs' ongoing operating and maintenance expenditure? If so, to what extent do these cost savings depend on the location, voltage and type of generation?	Energex believes it is unlikely that embedded generation can materially reduce ongoing operating and maintenance expenditure as these costs are generally determined by existing network attributes. In some cases embedded generation can increase operating and maintenance expenditure. Traditionally, distribution networks were designed to accommodate the flow of power in one direction from the substations through to the customer. However, with the rise in embedded generation on the LV network, power flows can now occur in both directions. Reverse power flows between the LV and 11kV networks lead to both voltage rise and voltage drops along the feeding network which must be managed to ensure voltage at customer terminals stays within statutory voltage limits. Energex has one of the highest penetrations of solar PV in the world. This has presented a number of challenges for Energex in terms of the safe and efficient management of the network. These challenges include maintaining electricity supply quality for customers and managing the effects of reverse power flows; both of which increase the cost of providing network services. Over the 2015-20 regulatory period, Energex expects to incur approximately $10 million in operating expenditure related to solar PV including voltage investigations and re-balancing LV transformer circuits. In addition, the increasing levels of reverse power flows mean that more sophisticated transformer monitoring is required. As a result, over the 2015-20 regulatory period, Energex expects to incur approximately $24 million in capital expenditure ($14 million for monitoring works and $10 million in remediation works) related to power quality issues caused by solar PV.

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Question 4: Specificity of calculations	
1. What is the appropriate degree of specificity in the calculation of avoided network costs and, if relevant, operating 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?	In the calculation of any LGNC there will always be a trade-off between simplicity and accuracy. An accurate calculation of avoided costs would need to take into consideration the generator type, size, connection voltage and location. The value of any avoided cost over time should also be considered. This level of calculation would be complex and costly to administer. If a more simplistic approach was selected this may result in inefficient investment outcomes and would not be consistent with the intention of the proposed Rule change or the NEO. It is important to note that avoided transmission use of service (TUOS) payments are currently paid to generators > 5MW to reflect the locational transmission charges the DNSP saves. Locational prices are not currently used for the distribution network due to the complexity of the calculation and it is expected that any benefit would be outweighed by the cost of administering such a calculation.
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?	The frequency of updating any calculated LGNC would need to provide an appropriate balance between providing a level of certainty for investors in embedded generators and any changes to the network cost savings seen by the DNSP that may result from changes in technology, network demand, network investment and the subsequent connection of any additional embedded generation in the same location.
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	(a) As noted above, Energex is of the view that, if not developed adequately, LGNCs may create distortions in the price signal and may incentivise small-scale embedded generators to invest in and operate assets in a manner that will not reduce network costs. This is particularly true for those embedded generators connected at the lowest voltage network (eg domestic solar PV) for whom any benefits they bring to the network are difficult to identify and quantify.

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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?	In addition, the proposal suggests the LGNC mechanism could be implemented in the form of a new network tariff. Any new network tariffs would be included in a DNSPs Tariff Structures Statement (TSS) and subject to the pricing principles set out in the Rules. Given that the proposal states that the credit should never be negative even if the costs outweigh the benefits, this aspect of the proposal would not be consistent with the cost reflectivity pricing principle. (b) As noted in Q2.1 and Q2.2, Energex believes that there are currently sufficient incentives in place to adopt efficient network and non-network solutions. (c) The location and availability (eg at times of peak demand) of an embedded generator may increase or decrease the need for network augmentation. In areas of high embedded generator penetration, augmentation may be required to maintain suitable reliability for customers. If the proposal results in inefficient investment in embedded generation, this could lead to additional problems in this area. (d) Energex expects that any LGNC payments to embedded generators would ultimately result in an increase to the network prices paid by customers. The proposed LGNC would be paid as the full value of avoided network costs (minus costs). Essentially, this would result in a value transfer from the DNSP to embedded generators, without any benefit for other consumers. Furthermore, the cost of calculating and administering the charge will ultimately increase a DNSPs costs and therefore network prices. In particular the direct payment to the embedded generator from the DNSP introduces the need for payment processes which are not currently in place, and the cost of administering payments and handling any disputes may add a significant cost for the DNSP. Similarly, network prices could increase in the case where expected network cost savings and deferred investment do not materialise. It is therefore arguable that the proposed Rule change would not advance the NEO.

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2. To what extent do your answers to 1(a) to (d) depend on: (a) To whom LGNCs are applied (eg 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 (ie 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?	(a) As noted in Question 3.1 above, the network benefit provided by embedded generation is often a function of the type of network constraint, the network load profile and the characteristics of the embedded generator (ie availability, size, connection voltage, and location). For an LGNC to provide an appropriate price signal and result in efficient outcomes, the calculation would need to take these factors into account. This is particularly difficult for the small scale embedded generation that the Rule change is targeting. (b) For an LGNC to have the desired result, an accurate but complex calculation is required which would require updating on a regular basis. In order to provide this it is likely that the cost of administering the tariff would lead to increased network prices for all customers. (c) Regardless of the proportion paid, the issues associated with identifying network benefits, complexity of the calculation, costly tariff administration and uncertain degrees of accuracy will remain.
3. If you do not consider that the proposed rule would enhance the NEO, are there potential alternative approaches that may do so?	As already discussed in Q2.1 above, Energex is of the view that the NER already provides sufficient incentives to invest in and operate embedded generation efficiently.
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 processes to enable the design, implementation and administration of LGNCs? To what extent does this depend on:	Energex has not yet undertaken any analysis to determine the extent to which existing systems and processes will need to be upgraded. However, Energex believes that the costs of designing, implementing and administrating the proposal could vary significantly depending on the complexity of the framework, methodology used to calculate the LGNC and the payment mechanism employed. Energex is not currently funded to make any process and system changes incurred as a result of this proposed rule change.

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(a) To whom LGNCs are applied (ie 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) – ie whether separate calculations are made for different voltage levels and/or locations? (c) How often the calculation is updated? (d) How often the LGNCs need 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)?	Regardless of the form of the LGNC calculation, existing systems and processes would require upgrades and the costs would ultimately be passed on to customers without any certainty that future benefits could be derived from such an investment.
3. How do these costs compare to the expected benefits of the proposed rule change?	Energex expects that any benefits of the proposed rule change would be outweighed by the implementation and administration costs.