

NATIONAL ELECTRICITY RULE CHANGE REQUEST – SMALL GENERATION AGGREGATOR FRAMEWORK

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FINAL

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1 Summary

AEMO requests a rule to better facilitate the participation of small generating units in the national electricity market (NEM). The proposed rule would create a new category of Registered Participant termed Small Generation Aggregator (“Aggregator”) in the National Electricity Rules (NER). This would allow AEMO to streamline the registration process for people wishing to supply electricity to the national grid from small generating units. AEMO proposes that the existing framework for the transfer of market loads also be applied to small generating units. The Aggregator would be the financially responsible Market Participant for each classified market generating unit and AEMO would settle the electricity supplied.

To implement the proposed rule, AEMO would need to make amendments to systems, relevant procedures and guidelines. To do this in a timely manner, and in anticipation of the Final Rule, the proposed rule includes transitional provisions to allow AEMO to begin its processes prior to the AEMC publishing its Final Determination. Consultation on relevant procedures would only begin after publication of the AEMC’s draft rule.

2 Background

2.1 Current Arrangements for Registration of Generators

Under clause 2.2.1(a) of the NER, a person who owns, controls or operates a generating system that is connected to the transmission or distribution system must register to participate in the NEM as a Generator, unless exempted from registration under the guidelines issued by AEMO under clause 2.2.1(c) of the NER. The NER require a person to register as a Generator for each generating system that they own, control or operate.

To be eligible for registration as a Generator, a person must fulfil the requirements set out in clause 2.2.1 of the NER:

- Obtain AEMO’s approval to classify and then classify the generating units as scheduled, semi-scheduled or non-scheduled; and
- Satisfy AEMO that the generating system will be capable of meeting or exceeding its performance standards.

Clause 2.2.1 of the NER also requires that generating units must be either classified as market or non market depending on whether the output is to be sold directly through the NEM or to a third party. A market generating unit can also be classified as an ancillary service generating unit.

2.2 Current Arrangements for Exemption of Generators

Under clause 2.2.1(c) of the NER, AEMO may exempt a person or a certain class of persons from registration as a Generator. Currently, persons who own, control and operate generating systems with a nameplate rating less than 5 MW qualify for a standing exemption from registration, and persons who own, control and operate generating systems with a nameplate rating between 5 MW and 30 MW may qualify for exemption on application to AEMO.

A person eligible for exemption in relation to a particular generating unit, who wishes to receive payment through the NEM for electricity generated by that unit, must apply for registration as a Market Generator and have the generating unit classified as a market generating unit.

2.3 Current Options Available for Small Generating Units

Currently, a person wishing to sell electricity generated by a small generating unit has the following options available for the sale of that generation:

- “Off market” (that is, does not receive payment through the NEM for electricity generated):
 - Under a contract to a Customer located at the same connection point; or
 - Under contract to the Local Retailer.
- “On market” (that is, receives payment through the NEM for electricity generated):
 - Directly by being registered with AEMO as a Market Generator; or
 - Under contract to an intermediary who would be registered with AEMO as the Market Generator.

2.4 Market Consultation Addressing Small Generation Participation

Prior to submission of this request, there have been a number of attempts to address potential barriers to small generation participation in the NEM, notably by the AEMC (ongoing), industry, government, and AEMO. This section acknowledges earlier work in this area and the rule change requests that have followed this work. With the exception of AEMO’s work, these consultations focussed on small embedded generating units, which have been considered a part of demand-side management.

2.4.1 Ministerial Council on Energy Standing Committee of Officials

In 2006, the Ministerial Council on Energy Standing Committee of Officials’ (MCE SCO) published a Discussion Paper on Impediments to the Uptake of Distributed Generation. In this paper, the MCE SCO noted the “...energy market (with associated regulation and system management practices) has been designed primarily to support large scale base load generation...” and “...there are a number of impediments in market design, rules, and operation relating to connection pricing and access which can affect the uptake of renewable and distributed generation (R&DG).” Subsequently, on 4 November 2010, the MCE SCO submitted rule change requests to the AEMC to address barriers to demand-side participation in the NEM, these requests seek to:

- Include embedded generation research into the Demand Management Incentive Scheme (DMIS) for Distribution Network Service Providers (DNSPs). The AEMC’s draft rule on this request requires the AER to consider improving incentives on DNSPs to encourage and facilitate more efficient connection of embedded generators; and
- Change the regulatory investment test for DNSPs to require DNSPs to examine non network alternatives, including demand management and distributed generation.

These requests are currently being considered by the AEMC and further information on these can be found on the AEMC’s website at: <http://www.aemc.gov.au/Electricity/Rule-changes/Open.html>.

2.4.2 Prime Minister’s Task Group on Energy Efficiency

On 8 October 2010, the Prime Minister’s Task Group published a report on Energy Efficiency. This report discussed the need for the Australian Energy Market to reduce key barriers to facilitate the uptake of demand-side options (termed ‘energy efficiency opportunities’). In this report the Task Group supported:

“...the principle that, consistent with existing NEM rules, investment in demand-side options (energy efficiency and distributed generation) should occur when it is more cost-effective than, and provides the same level of energy security as, supply-side options. Distributed generators should have the same ability to export energy to the grid and sell it in the market as all other generators.”

It also noted the AEMC activities currently underway and discussed below in Section 2.4.3.

2.4.3 AEMC's Work

The AEMC's Final Report on the Review of Energy Markets in Light of Climate Change Policy recommended pursuing the use of small generating units in the NEM to increase generation capacity. The AEMC considered that this should be progressed expeditiously and noted the potential for on-site generators to be used to assist in a tight supply and demand balance and increase "...the generation capacity potentially available to the market by facilitating the use of existing but underutilised embedded generators."

The AEMC noted the need for these on-site generating units to be managed by third parties and the following two areas where processes could be amended to facilitate this occurring:

- Addressing inconsistencies between Network Service Providers (NSPs) in their technical assessment and connection processes (currently under consideration by the AEMC and discussed above in Section 2.4.1).
- Streamlining AEMO's registration processes.

This rule change request seeks to address the second of these areas identified by the AEMC.

The AEMC's Final Report on Stage 2 Demand-side Participation concluded that the NER did not impede the use of demand-side participation. Nonetheless, the AEMC identified a number of areas where the NER could be improved to encourage demand-side participation, these included:

- Allowing operating expenditure used for demand-side participation be excluded from the AER's Efficiency Benefit Sharing Scheme.
- Amendments to the AER's DMIS to extend it to include the connection of embedded generating units.

The AEMC is currently consulting on the MCE SCO's rule change requests promoting these improvements.

2.4.4 Small Generator Framework Design

On 28 July 2010, AEMO published a paper outlining the small generator framework design principles, which aim to minimise barriers to cost effective small generator participation in the NEM. These principles have guided this rule change request, which seeks to facilitate the participation of small generating units in the NEM. Unlike the consultations previously discussed, AEMO's approach distinguishes between a "small generator" and an "embedded generator". AEMO considers small generating units as those generating units that do not require their owners, operators or controllers to register as participants in the NEM, and these could be connected to a distribution or transmission network. Further information on these principles can be found at: <http://www.aemo.com.au/registration/0118-0001.html>.

3 Statement of Issues

3.1 Barriers to the Participation of Small Generating Units

The current registration and exemption process in Chapter 2 of the NER imposes unnecessary costs on AEMO that are passed through registration application fees. The current process requires AEMO to consider the attributes of each generating system an applicant wishes to be registered in respect of. This can be a barrier to entry for small capacity or low capacity factor generation where the application fee becomes a significant proportion of the likely income for a prospective participant.

Currently, 18 Registered Participants have classified 37 generating units with a nameplate rating of less than 5 MW as market non-scheduled generating units. A number of small generating units with capacities between 5 MW and 30 MW have either been exempted or have elected to be registered.

A prospective participant wishing to register in relation to small generating systems would incur the Market Non-Scheduled Generator registration application fee of \$5,100 per application (increasing to \$10,000 in the 2015/16 financial year, which is designed to cover AEMO's costs of processing and approving the application). A person who needed to apply separately for 20 small generating units would incur a total registration cost of between \$100,000 and \$200,000. In contrast, a new Market Customer would incur a registration cost of up to \$10,000 regardless of the number of market loads to be classified.

AEMO considers that there is little benefit in assessing individual applications for each small generating system; this poses an unnecessary regulatory burden for AEMO and the applicant, which could be exacerbated if the volume of applications became significant.

4 Proposed Solution

AEMO's proposed solution would address the issue discussed in Section 3.1 by creating the Aggregator as a new category of Registered Participant and including the necessary NER changes to allow AEMO to implement a framework to facilitate the participation of small generating units in the NEM.

4.1 Registering as an Aggregator

Under the proposed rule, a person who is eligible for exemption from registering in respect of a generating system would be able to register in the Aggregator category. To be eligible for registration as an Aggregator, the person would need to satisfy AEMO that they intend to classify within a reasonable period of time, their small generating units at one or more connection points as market generating units.

Once registered, Aggregators would be able to classify additional small generating units without the need to register in respect of those units, much like Market Customers today, who can change their market loads through an administrative process through AEMO's Market Settlements and Transfer Solution Systems (MSATS). Under AEMO's proposed rule, a person would still need to seek exemption for generating systems that have a nameplate rating between 5 MW and less than 30 MW.

4.2 Other NER obligations

Aggregators would be required to meet the obligations of Market Participants, including:

- Paying Participant fees (discussed in Section 4.3).
- Meeting financial obligations under Chapter 3 of the NER.
- Providing compliant metering¹ to allow an accurate and timely settlement of the NEM.
- Being the responsible person for the metering installation, except where the Local Network Service Provider has become the responsible person under clause 7.2.3 of the NER.

4.3 Structure of Participant Fees

AEMO proposes to structure fees for Aggregators in a number of stages:

1. Following commencement of the rule, no energy-based fee would be applied for generation.
2. From the mid-2013 software release, the energy-based fee applicable to Market Customers for AEMO's core NEM and full retail competition (FRC) functions would apply to the net generation metered at a small generator connection point.

¹ Refer to Chapter 7 of the NER.

3. In 2016, the current structure of participant fees expires and AEMO will undertake consultation to establish a new structure. Depending on the outcome of that consultation, this may require software changes to implement the new structure.

In addition, AEMO would charge the registration fee applicable to Market Non-scheduled Generators for new Aggregators. Note, under the proposed rule this would be a one-off fee and would not be required for each new generating unit. However, where AEMO is required to approve the exemption of a small generating unit (currently for those units above 5 MW and less than 30 MW), a fee to approve the exemption would continue to apply.

The proposed approach allows commencement of the proposed small generator framework as soon as possible. AEMO anticipates the loss of revenue to AEMO from this approach would be less than \$10,000 a year and is not sufficient to justify a further delay in commencement of the framework.

An alternative would be to use the fee structure applicable to Generators. The current fee structure for Generators includes energy-based and capacity-based components. As AEMO would not be collecting capacity information for small generators, the Generator fee structure would not be appropriate.

4.4 Recovery of Ancillary Services Costs

At this time, AEMO is not proposing that Aggregators participate in the ancillary services regime of the NEM. Accordingly, AEMO is not proposing to recover ancillary services costs from Aggregators. This is consistent with the treatment for small generating units that are not registered in the NEM.

As with Participant Fees, AEMO is proposing that the rule commences before software changes relating to recovery of costs are implemented. During the transition, AEMO's software would treat generation as a negative load and result in a small amount of money being paid to Aggregators. AEMO anticipates the amount of money paid to Aggregators would be less than \$10,000 a year.

4.5 Information Collected on Small Generating Units

Consistent with current policy for generating systems eligible for exemption under AEMO's guidelines and information collected on customer loads, AEMO is proposing to collect minimal information on small generating units. Significant participation by small generating units might result in an unreasonable administrative burden for AEMO if it is required to maintain, review, and update a database of small generating units. The proposed framework negates this issue because all the small generating units would be classified and, potentially, transferred through MSATS; however, AEMO considers that, where relevant, standing data under clause 3.13.3 of the NER should be collected and provided by Aggregators. Although AEMO initially estimates that these generating units are unlikely to have a significant impact on power system security because of their size, likely geographic dispersion and current low penetration, AEMO considers that it is prudent to collect information for forecasting and planning purposes.

Under the proposed rule, small generating units would be excluded from the calculation of the carbon dioxide equivalent intensity index (CDEII). Without this, if a significant number of small generating units participated under this new framework AEMO would be required to calculate a CDEII for each generating unit, which would impose a significant administrative burden, and associated costs, on AEMO and Aggregators. Given that these generating units are eligible for exemption, AEMO considers that the costs would outweigh the benefit of requiring these to participate in the CDEII.

5 Proposed Rule

5.1 Description of the Proposed Rule

The proposed rule would:

- Create a new category of Registered Participant termed “Small Generation Aggregator” in Chapter 2.
- Allow a person who is exempt from registration under clause 2.2.1(c) of the NER to register in the new category of Registered Participant termed “Small Generation Aggregator” (see new definition below).
- Require a “Small Generation Aggregator” to be a person registered by AEMO and who supplies electricity generated by one or more small generating units that is connected to a transmission or distribution system.
- Create eligibility criteria for applicants seeking registration as a “Small Generation Aggregator” including that the applicant must satisfy AEMO that it intends to classify, within a reasonable period of time, the electricity generated from small generating units at one or more connection points as market generating units.
- Require a person not to engage in the activity of selling electricity directly to the market at any connection point, unless that person is registered by AEMO as a Market Participant and that connection point is classified as one of that person’s market connection points.
- Require the person supplying electricity at any connection point to satisfy the requirements of the relevant participating jurisdiction for that connection point so that the person is permitted to supply electricity in the spot market in relation to that connection point.
- Require the “Small Generation Aggregator’s” activities only to relate to small generating units it has classified as market generating units and only while it is registered with AEMO as a “Small Generator Aggregator”.
- Require a “Small Generation Aggregator” to sell all sent out generation through the spot market and accept payments from AEMO for all sent out generation at the spot price applicable at the connection point as determined for each trading interval in accordance with the provisions of Chapter 3. This is to be classified as a civil penalty provision under the National Electricity (South Australia) Regulations.
- Require a “Small Generation Aggregator” to purchase all electricity supplied through the national grid to the “Small Generation Aggregator” at that connection point from the spot market and make payments to AEMO for such electricity supplied at that connection point as determined for each trading interval in accordance with the provisions of Chapter 3. This is to be classified as a civil penalty provision under the National Electricity (South Australia) Regulations.
- Amend the definition of Market Participant and amend clauses 2.4.1(a), 2.4.2(c) and 2.12 of the NER to include “Small Generation Aggregator”.
- Amend clause 2.10.1 of the NER to allow AEMO to reject a notice from a “Small Generation Aggregator” wishing to terminate its classification of a connection point as one of its market generating units or where it ceases to be a “Small Generation Aggregator” in relation to any of its market generating units unless AEMO is satisfied that:
 - Another person has classified the connection point as one of its market generating units and registered as a “Small Generation Aggregator”;
 - The relevant Local Retailer has agreed or is otherwise required by laws of the relevant participating jurisdiction to assume responsibility for payments to AEMO for electricity supplied to that connection point; or

- The small generating unit at that connection point will be disconnected on and from the date specified in the notice to AEMO, and that disconnection is appropriate after the relevant participating jurisdiction's guidelines and procedures have been considered.
- Amend clause 3.13.14 of the NER to exclude small generating units from the CDEII and include a clause to allow AEMO to make minor or administrative changes to the CDEII procedures without complying with the Rules consultation procedures.
- Create new definitions for:
 - Small Generation Aggregator – a person who is registered by AEMO as a Small Generation Aggregator under Chapter 2 of the NER.
 - Small generating unit - A generating unit with a nameplate rating of less than 30MW at the connection point that meets the criteria referred to in the guidelines issued by AEMO under clause 2.2.1(c) of the NER in such a way that may entitle a person who owns, operates or controls that generating unit to be, or apply to be, exempt from the requirement to register as a Generator.

As mentioned, the proposed rule would include two provisions intended to be classified as civil penalty provisions under the National Electricity (South Australia) Regulations (“Regulations”), these are consistent with similar NER provisions. AEMO understands that the AEMC would need to seek changes to the Regulations before these become civil penalty provisions. AEMO has consulted with the AER (the organisation responsible for enforcement and compliance of the NER) and the AER has indicated it supports these provisions being considered civil penalty provisions.

5.2 Implementation and Transition

AEMO considers that transitional arrangements are necessary to facilitate the introduction of the Aggregator framework as changes would be needed to a number of AEMO's procedures and systems.

Implementation of the proposed rule and AEMO's proposed solution would require AEMO to make changes to existing procedures and systems. To implement the proposed rule in a timely manner, AEMO requests transitional provisions requiring it to amend the:

- CDEII procedures to exclude small generating units (the proposed rule excludes these from clause 3.13.14 of the NER).
- MSATS procedures to take account of the proposed rule.

Prior to AEMO being able to collect fees under its current Participant fee determination as discussed in Section 4.3, AEMO requires a transitional provision to require it to treat an Aggregator as a Market Customer for the purpose of collecting a registration fee, the energy-based general fee, and FRC fee from an Aggregator.

5.3 Draft of the Proposed Rule

AEMO's draft rule is included in Appendix A.

6 How the Proposed Rule Contributes to the National Electricity Objective

Before the AEMC can make a rule change it must apply the rule making test set out in the National Electricity Law (NEL), which requires it to assess whether the proposed rule will or is likely to contribute to the (national electricity objective) NEO. Section 7 of the NEL states the NEO is:

... to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to –

- (a) price, quality, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system.

AEMO considers that the proposed rule would reduce barriers to entry and increase opportunities for small generating units to participate in the NEM. This would be achieved by reducing transaction costs (including the registration application fee and administration costs) for AEMO and persons wishing to register for the purpose of providing electricity from small generating units. Note the success of an increase in participation of small generating units will also depend on other factors, including the economics of providing the generation, the efficiency of the connection process and the technology available to quickly start-up the generation when required.

Productive efficiency increases when the current level of output can be produced at a lower cost. AEMO considers that the proposed rule promotes the NEO by increasing productive efficiency by:

- Facilitating more efficient use of under-utilised generation assets by increasing the supply options available for that generation asset (other than under contract to the Local Retailer or to a customer located at that site). This could have the following effect:
 - The supply of electricity from these small generating units at times of high prices could reduce regional reference price (RRP) as the supply and demand balance is met, hence output would be produced at a lower cost.
 - More competitive contract prices for the electricity generated and sold to the Local Retailer.
- A reduction in the price of standby generation for a customer located at the same site where the small generating unit is located because another income stream might reduce the cost to these customers and, in turn, this might reduce prices for those businesses' customers.
- Facilitating utilisation of AEMO's existing systems and administrative processes to allow Aggregators to enter the market at lower cost.
- Increasing the reliance on demand-side participation might, in the long term, reduce the need for investment in electricity network augmentations and large scale generation. If this generation occurs close to load centres, demand would be met by local generation and this would reduce the overall need for investment in electricity generation and network capacity (electricity infrastructure) without trading off supply reliability, quality, safety and security of supply of electricity.

Given this, AEMO considers the relevant aspect of the NEO is efficient investment in, and efficient operation of, electricity services with respect to the price, quality, safety, reliability and security of supply of electricity. AEMO considers that the utilisation of small generating units would, in turn, contribute toward facilitating an efficient level of generation and transmission investment.

7 Expected Benefits and Costs of the Proposed Rule

7.1 Expected Benefits

Table 1 outlines AEMO's quantification of potential benefits arising from the proposed rule. As discussed in Section 6, AEMO expects the proposed rule would encourage participation of small generating units in the NEM. The following are likely to benefit from the proposed rule:

- Owners of small generating units - would have another alternative available for the sale of electricity produced by their small generating unit.
- Aggregators - the new framework would increase the economic viability of the Aggregator business model.
- Consumers:

- The participation of small generating units is also likely to increase the amount of peaking plant available in the NEM. When supply and demand imbalances occur the increase in supply might assist in reducing the imbalance and thus reducing the RRP. Ultimately, reductions in the RRP would reduce the price retailers pay for electricity and this would, in the long term, reduce prices for consumers.
- Reductions in the overall need for investment in electricity generation and network capacity without trading off supply reliability. The need for investment in infrastructure is based on forecast maximum demand which is likely to reduce as a result of the proposed rule.

Table 1 Small Generator Aggregator Benefits Assessment

OUTCOME OF PROPOSED RULE	ASSOCIATED BENEFIT	ESTIMATED NET BENEFIT (\$) OVER THREE YEARS
Streamlined registration process.	Cost savings to AEMO and registration applicants	\$500,000 (1,000 potential sites, 5% take-up rate, \$10,000 per registration)
Small generators able to participate in market	More generation to be expected during high price intervals, resulting in lower dispatched costs and deferral of investment in low capacity factor peaking plant.	\$5,000,000 (gross value of generation - average 3MW size, 50 sites, operating 1 hr/year at \$12,500) Net benefit more difficult to assess, and based on cost difference between using small generation compared to using dispatched generation in the NEM. Longer term benefits (beyond 3 year timeframe) including demand side response, lower reserve requirements and lower overall investment. Take up rate beyond 3 years expected to be higher but not quantified yet.

7.2 Expected Costs

The proposed rule could result in a significant increase in participation of small generation units and this could:

- Impact AEMO’s operation of the power system by reducing AEMO’s ability to forecast demand, and manage network loads and voltage in local areas. If power system security issues arose, AEMO could issue a direction under clause 4.8.9 of the NER.
- Result in difficulties for NSPs assessing connection agreements for small generating units. This could occur if the volume of connection applications for small generating units that are exempt from the schedule 5.2 technical requirements substantially increases, making it more difficult for NSPs to agree minimum technical requirements. AEMO has not investigated whether this is a material issue for NSPs and considers the consultation process provides adequate opportunity for NSPs to raise their issues.

To implement the proposed rule AEMO would need to make the following changes:

- Develop an Aggregator registration application and guideline, and make amendments to the Generator guideline.
- Set up systems and make procedural changes to allow the transfer of small generating units, and for the recovery of the energy-based general and FRC fee. It is likely that system amendments would be necessary to MSATS and EMMS, and the MSATS procedures and minor amendments to the CDEII procedures.

While there are a lot of variables involved in market changes, AEMO’s preliminary assessment of its costs in implementing this project is \$600,000 and this cost is likely to be absorbed within AEMO’s normal operational budget. AEMO notes that participants would also incur costs participating in consultations setting up this new framework, setting up new connection points and

ensuring there is compliant metering for each small generating unit, and establishing or changing participant systems; including Local Network Service Providers.

Terms or Abbreviations

TERM OR ABBREVIATION	EXPLANATION
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
Aggregator	Small Generation Aggregator
CDEII	Carbon dioxide equivalent intensity index
DMIS	Demand Management Incentive Scheme
DNSP	Distribution Network Service Provider
EMMS	Electricity Market Management System
FRC	Full Retail Competition
MCE SCO	Ministerial Council on Energy Standing Committee of Officials'
MSATS	Market Settlement and Transfer Solutions
NEL	National Electricity Law
NEM	National electricity market
NEO	The national electricity objective as stated in section 7 of the NEL
NER	National Electricity Rules
NSP	Network Service Provider
RRP	Regional reference price
Regulations	National Electricity (South Australia) Regulations