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Australian Energy Market Commission

## CONSULTATION PAPER

# NATIONAL ELECTRICITY AMENDMENT (GENERATOR REGISTRATIONS AND CONNECTIONS) RULE

### PROPOSERS

Australian Energy Council  
Mr Damien Vermeer

8 OCTOBER 2020

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# RULE

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## ABOUT THE AEMC

The AEMC reports to the Council of Australian Governments (COAG) through the COAG Energy Council. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the COAG Energy Council.

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# 1 INTRODUCTION

## 1.1 Outline of the rule change requests

The Australian Energy Market Commission (AEMC or Commission) is considering two requests to amend the National Energy Rules (NER) relating to the treatment of smaller generation in the national energy market (NEM), and the transparency and certainty of the generator registration and exemption process. The rule change requests were submitted by the Australian Energy Council (AEC)<sup>1</sup> and an individual, Mr Damien Vermeer.<sup>2</sup>

The rule change request submitted by the AEC on 15 December 2018, seeks to increase the participation of smaller generators in central dispatch to enable improved management of the power system and the efficient operation of the market. The AEC's rule change also proposes changes to the Australian Energy Market Operator's (AEMO's) process for granting exemptions from being registered as a scheduled or semi-scheduled generator. Specifically, the AEC's rule change request seeks to:

- reduce the threshold for classifying generators as non-scheduled from 30MW nameplate capacity to 5 MW, making the default classifications for generators above 5 MW scheduled or semi-scheduled
- narrow the grounds upon which generators can be exempt from scheduling obligations
- require AEMO to publish its reasons for exempting a person from the requirement to register as a generator, or for classifying a generating unit as non-scheduled.

The rule change request submitted by Mr Damien Vermeer on 2 September 2020 seeks amendments to the NER that would minimise uncertainty in the registration and connection process for embedded generators (those connected to the distribution system rather than the transmission system). Mr Vermeer, is specifically proposing amendments that would grant a conditional exemption from registration for embedded generators with a nameplate capacity between 5-30 MW.

Given these two rule change requests are seeking to amend the NER to address concerns about the registration of generators, the Commission is consulting on both of them under the one consultation paper. As the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the national electricity objective (NEO),<sup>3</sup> it will be applying the framework set out below in section 1.3 when considering these rule change requests. This will streamline the consultation process for stakeholders and will facilitate more integrated and consistent decision-making.

The rule change request from the AEC to require a greater number of generators to become scheduled (or semi-scheduled) would result in more active participation in central dispatch and more consistent obligations applied to a greater number of NEM participants. The AEC's request considers that, if greater numbers of participants were to reveal their intentions to the market operator, this would promote more efficient operation of the market and power

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1 Project page available [here](#).

2 Project page available [here](#).

3 Section 88 of the NEL.

system. It is proposed that this would help to improve AEMO's market scheduling and forecasting process, improving security and reliability in the NEM. Notably, this proposal has parallels with the policy direction being considered under the Energy Security Board's (ESB) two-sided market design initiative, which is currently being pursued as part of the ESB's post 2025 market design work.<sup>4</sup> Broadly, the two-sided market initiative aims to set out the reform path for the achievement of a more efficient balance of supply and demand in the wholesale market.<sup>5</sup> In order to achieve this, a greater and more diverse level of participation is needed on both sides of the market — demand and supply. This requires consideration of how to change the dispatch and scheduling arrangements and the NEM participation frameworks to make them more flexible and accessible.<sup>6</sup>

The policy questions that the Commission will need to consider when assessing this rule change request will be similar to those that will be considered under the two-sided market initiative. Such questions include how best to balance the private costs involved in participating in dispatch against the public good that can be realised in having a more efficiently managed system. The consideration of the AEC's rule change proposal will likely be instructive for the broader and longer-term two-sided market reform path.

The following sections of this introductory chapter set out:

- the approach for this consultation paper, its timeline and the process for making a submission
- the proposed assessment framework.

## 1.2 Approach for this rule change process

This consultation paper seeks feedback from stakeholders to help the Commission understand the significance of the identified issues and whether the proposed solutions are appropriate.

The consultation paper seeks feedback on the:

- AEC proposal that a greater number of generators should participate in central dispatch to address concerns about AEMO's ability to efficiently manage the power system as it transitions
- proposals from the AEC and Mr Vermeer for greater transparency and certainty in the classification of generators, including when exemptions from being scheduled (or semi-scheduled) apply.

Stakeholder questions can be found throughout the paper and have also been collated in a stakeholder submission template, available on the project page for these rule change requests.

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<sup>4</sup> The consultation paper for this project was released by the ESB on 7 September 2020 and is available [here](#).

<sup>5</sup> ESB, *Post 2025 market design*, consultation paper, p. 86.

<sup>6</sup> *Ibid*, p. 92.

### 1.2.1 **Timeline for these rule change requests**

This rule change request will be assessed over a longer period than the standard rule change process due to:

- sensitivity about the extra workload that stakeholders may be experiencing as a consequence of the current COVID-19 pandemic
- avoiding consulting on the draft determination over the Christmas and new year period.

Submissions to the consultation paper to be received by **17 December 2020**.

### 1.2.2 **How to lodge a submission**

Submissions to this consultation paper will be open for a period of 10 weeks and will close on the **17 December 2020**. The Commission cannot guarantee that it will be able to consider submissions provided after this date.

You must lodge written submissions in response to this consultation paper via the Commission's website.

To lodge a submission, please:

1. refer to the **submission template** on the project page at:  
<https://www.aemc.gov.au/rule-changes/generator-registration-thresholds>
2. complete the submission template (answering the questions you want to respond to) or draft a submission using your own preferred format
3. access the 'lodge a submission' webpage at: <https://www.aemc.gov.au/contact-us/lodge-submission>
4. provide your details, noting the project name and reference number:
  - a. Generator registration thresholds
  - b. ERC0256
5. upload your completed submission
6. if using the submission template, also upload a signed and dated cover letter on company letterhead.

The Commission's guide for making submissions is at: <https://www.aemc.gov.au/our-work/changing-energy-rules-unique-process/making-rule-change-request/tips-making-submission>

Please note, the Commission publishes all submissions on its website, subject to confidentiality requirements. Please clearly mark any sections of your submission which you consider contain confidential material.

If you have any questions about this project, please contact:

- Kate Degen on (02) 8296 7812 or [kate.degen@aemc.gov.au](mailto:kate.degen@aemc.gov.au)
- Kate Wild on (02) 8296 0622 or [kate.wild@aemc.gov.au](mailto:kate.wild@aemc.gov.au)

## 1.3 Assessment framework

### 1.3.1 Achieving the NEO

Under the National Energy Law (NEL), the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the NEO.<sup>7</sup> This is the decision-making framework that the Commission must apply.

The NEO is:<sup>8</sup>

To promote efficient investment in, and efficient use of, electricity services for the long term interest of consumers of electricity with respect to:

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

### 1.3.2 Commission assessment framework

In determining whether the proposed rules are likely to promote the NEO, the Commission proposes to consider the following:

- **Enhance security and reliability:** To what extent would the proposed changes deliver improvements to AEMO's market scheduling and forecasting process and in turn improve security and reliability in the NEM?
- **Promote transparency:** To what extent could limiting AEMO's discretionary powers in the registration process reduce information asymmetry, promote a more level playing field, and improve the decision-making of participants?
- **Promote efficient investment:** To what extent might the proposed changes facilitate improved decision-making by participants regarding the registration and exemption process and thereby increase efficient investment in generation assets?
- **Minimises administrative and regulatory burden:** Would the changes proposed increase or decrease the administrative/ regulatory burden on affected entities?

#### QUESTION 1: PROPOSED ASSESSMENT FRAMEWORK

Do you agree with the proposed assessment framework or are there any additional assessment criteria the Commission should use when assessing identified issues and possible solutions?

### 1.3.3 Making a more preferable rule

Under s. 91A of the NEL, the Commission may make a rule that is different (including materially different) to a proposed rule (a more preferable rule) if it is satisfied that, having

<sup>7</sup> Section 88 of the NEL.

<sup>8</sup> Section 7 of the NEL.

regard to the issue or issues raised in the rule change request, the more preferable rule will or is likely to better contribute to the achievement of the NEO.

### 1.3.4 Northern Territory rule-making requirements

Under the Northern Territory legislation adopting the NEL, the Commission must regard the reference in the NEO to the “national electricity system” as a reference to whichever of the following the Commission considers appropriate in the circumstances having regard to the nature, scope or operation of the proposed rule:<sup>9</sup>

- (a) the national electricity system
- (b) one or more, or all, of the local electricity systems<sup>10</sup>
- (c) all of the electricity systems referred to above.

For the purposes of the proposed electricity rules, the Commission proposes to regard the reference to the “national electricity system” in the NEO to be a reference to item (c) from the list above.

The NER, as amended from time to time, apply in the Northern Territory, subject to derogations set out in regulations made under the Northern Territory legislation adopting the NEL.<sup>11</sup> Under those regulations, only certain parts of the NER have been adopted in the Northern Territory.<sup>12</sup>

As the proposed rules, in part, relate to the parts of the NER that apply in the Northern Territory, the Commission is required to assess whether to make a uniform or differential rule (defined below) under Northern Territory legislation.

Under the NT Act, the Commission may make a differential rule if, having regard to any relevant MCE statement of policy principles, a different rule will, or is likely to, better contribute to the achievement of the NEO than a uniform rule.<sup>13</sup>

A differential rule is a rule that:

- varies in its term as between:
  - the national electricity system, and
  - one or more, or all, of the local electricity systems, or
- does not have effect with respect to one or more of those systems but is not a jurisdictional derogation, participant derogation or rule that has effect with respect to an adoptive jurisdiction for the purpose of s. 91(8) of the NEL.

9 Clause 14A of Schedule 1 to the National Electricity (Northern Territory) (National Uniform Legislation) Act 2015 (referred to here as the NT Act), inserting section 88(2a) into the NEL as it applies in the Northern Territory.

10 These are specified Northern Territory systems, listed in schedule 2 of the NT Act.

11 The regulations under the NT Act are the National Electricity (Northern Territory) (National Uniform Legislation) (Modifications) Regulations 2016.

12 For the version of the NER that applies in the Northern Territory, refer to: [www.aemc.gov.au/regulation/energy-rules/northern-territory-electricity-market-rules/current](http://www.aemc.gov.au/regulation/energy-rules/northern-territory-electricity-market-rules/current).

13 Section 14B of Schedule 1 to the NT Act, inserting section 88AA into the NEL as it applies in the Northern Territory.



A uniform rule is a rule that does not vary in its terms between the national electricity system and one or more, or all, of the local electricity systems, and has effect with respect to all of those systems.<sup>14</sup>

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<sup>14</sup> Section 14 of Schedule 1 to the NT Act, inserting the definitions of “differential Rule” and “uniform Rule” into section 87 of the NEL as it applies in the Northern Territory.

## 2 PARTICIPATION OF SMALLER-SCALE GENERATION IN CENTRAL DISPATCH

The AEC's rule change request is concerned with ensuring AEMO is able to efficiently manage the power system in the context of conventional large-scale generation being replaced over time by smaller-scale generating technologies. In particular, the AEC wants to extend AEMO's control of the power system to small generating units between 5 MW and 30 MW in nameplate capacity, thus ensuring they participate in central dispatch and contribute to the efficiency, security and reliability of the national electricity system.<sup>15</sup> The Commission is seeking stakeholder feedback on the significance of the issue that the AEC has raised and the appropriateness of the proposed solutions, including whether there are alternative solutions that should be considered.

This chapter outlines the:

- issue identified by the AEC
- proposed solution, and
- issues for consultation.

### 2.1 The issue identified by the AEC

In its rule change request, the AEC sets out its concern that AEMO's ability to efficiently manage the power system is being compromised by the growing proportion of non-scheduled generation in the NEM.<sup>16</sup>

Unlike scheduled or semi-scheduled generators, non-scheduled generators are not required to participate in central dispatch, which means that their availability intentions are not used as direct inputs into AEMO's forecasts, such as the medium-term projected assessment of system adequacy (MTPASA) or the short-term projected assessment of system adequacy (STPASAs). Neither do they participate in pre-dispatch or follow dispatch instructions. This effectively means that the intentions or activities of non-scheduled generators are invisible to the market operator and other market participants.<sup>17</sup>

The AEC is concerned about AEMO's ability to manage the power system in the context of it becoming increasingly "characterised by progressively smaller units sizes, and also more greatly affected by variations in supply and demand".<sup>18</sup> In light of these trends, the AEC suggests the existing thresholds for requiring generating units to participate in central dispatch may no longer be appropriate. The AEC explains that, when the NEM began in 1998, 30 MW was set as the default threshold for assigning scheduling obligations because, at that time, generators smaller than this had only a minor role in the power system.<sup>19</sup> The threshold of 30 MW was considered a reasonable trade-off between the value to the market

15 AEC, *Generator registration thresholds — rule change request*, p. 3.

16 AEC, *Generator registration thresholds — rule change request*, p. 2.

17 AEMO, *Guide to generator exemptions and classifications of generating units*, available [here](#).

18 AEC, *Generator registration thresholds — rule change request*, p. 2.

19 *Ibid.*

of exposing a generator to scheduling, against the compliance costs which would be imposed should they be scheduled.<sup>20</sup> Over time, there has been an increasing number of generators falling below this threshold for participating in central dispatch.<sup>21</sup> This results in an increasing proportion of generation classified as non-scheduled in the NEM today. The AEC also points out that the proliferation of small units aggregated to form large generating systems means that the 30 MW per unit size test is no longer appropriate for the changing market conditions.<sup>22</sup>

The AEC expresses concern that if non-scheduled units continue to account for a growing share of the market, combined with increasing variations in supply and demand, it will be increasingly difficult for AEMO to ensure efficient control over the market. This is because AEMO's overall visibility of the power system is reduced, making it more difficult to efficiently forecast and schedule market activity in the NEM.<sup>23</sup>

#### BOX 1: GENERATING UNIT CLASSIFICATIONS IN THE NEM

To participate in the NEM, a person must become a registered participant unless eligible for an exemption. Any person engaged in the activity of owning, controlling or operating a generating system in the NEM must be registered as a *Generator*, unless exempt. Before officially becoming a *registered participant* in the NEM, a *Generator* must also classify each of its *generations units*.

There are three primary types of generator classifications:

- scheduled — the *generating unit* participates in *central dispatch*
- non-scheduled — the *generating unit* does not participate in *central dispatch*
- semi-scheduled — the *generating unit* will participate in *central dispatch* in specific circumstances.

Generally, the classification of a *generating unit* is determined by its size and technical capacity. These two generator characteristics are positively correlated with the scope of their central dispatch obligations. All classifications are subject to AEMO's approval, which is in turn subject to the satisfaction of various technical and operational requirements.

Source: AEMO, Guide to generator exemptions and classifications of generating units, available [here](#). Section 11(1)(a) of the NEL.

## 2.2 The AEC's proposed solution

To address these issues, the AEC proposes the NER be amended to lower the default threshold for being classified as non-scheduled from 30 MW to 5 MW nameplate capacity. This would mean that new generators above 5 MW nameplate capacity would be classified as scheduled or semi-scheduled, unless an exemption is granted by AEMO.

20 Ibid.

21 Ibid, p. 1.

22 Ibid.

23 Ibid, p. 3.

The following chapter describes the other aspect of the AEC's proposed solution regarding exemptions. This includes changes to the NER that would limit the circumstances under which new generators above 5 MW nameplate capacity could be granted an exemption from being scheduled or semi-scheduled and require AEMO to publish its reasons for granting exemptions.

The remainder of this chapter describes AEC's proposal to lower the threshold for being classified as non-scheduled and the AEC's assessment of the costs and benefits.

### **2.2.1 Lowering the threshold for generators to be scheduled**

Clause 2.2.2(a) of the NER requires generating units with a nameplate rating of 30 MW or greater to be classified as scheduled generating units, unless AEMO approves their classification as semi-scheduled or non-scheduled generating units. The AEC proposes this be amended so that the threshold is lowered to a nameplate rating of 5 MW or greater.<sup>24</sup> This would make the default classification for generators over this 5 MW nameplate rating threshold scheduled or semi-scheduled, but would still allow AEMO to consider exemptions on a case-by-case basis. This would be achieved by reducing the minimum size threshold for scheduled and semi-scheduled generating units from 30 MW to 5 MW in clauses 2.2.2 and 2.2.7 of the NER. It is also proposed that clause 2.2.3 of the NER is amended so that a generating unit less than 5 MW, rather than 30 MW, must be classified as non-scheduled, unless AEMO approves its classification as a scheduled or semi-scheduled generating unit.

The AEC explains that this 5 MW threshold has been chosen based on AEMO's current practice of granting registration exemptions for generators with a nameplate rating less than 5 MW.<sup>25</sup>

Although Chapters 4, 5 and 6 of the NER contain further references to 30 MW thresholds, the AEC does not see any need to maintain consistency between these chapters and clause 2.2 of the NER and as such does not propose any amendments to those chapters.<sup>26</sup> The AEC's rationale is that the thresholds in these later chapters in the NER relate to different issues, specifically system security management and technical connection requirements.<sup>27</sup>

The AEC also makes clear that it only proposes for this rule change to affect generators at the time of their registration, and that AEMO's existing practice of grandfathering following changes to registration rules would apply for existing plants registered inconsistently with this new provision.<sup>28</sup>

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24 Ibid.

25 AEMO, *Guide to generators exemptions and classification of generating units*, 23 January 2020, p. 8, available [here](#).

26 AEC, *Generator registration thresholds — rule change request*, p. 2.

27 Ibid, p. 2.

28 Ibid, p. 1.

### 2.2.2 **Expected costs and benefits of the proposed solution**

The AEC considers that its rule change would help to address the risks to AEMO's ability to manage the transitioning power system. More specifically, the AEC considers that these proposed amendments to the NER would:<sup>29</sup>

- increase the accuracy of the forecasting and market scheduling process by increasing the amount of information available to the relevant forecasting and dispatch systems
- help AEMO maintain control over the NEM and prevent a situation where AEMO's ability to manage the market is compromised
- reduce the scope of network congestion by capturing more generators with known locations in the dispatch process.

The AEC sets out the following costs for its proposed solution, which it considers are not material compared with the benefit of increasing the quantum of generation which is scheduled:<sup>30</sup>

- Smaller generating units will be required to install generation control systems, the costs of which the AEC suggests are not appreciable due to continuously declining costs of these technologies.
- Minor additional assessment costs for AEMO as smaller plants will no longer be automatically exempt from registering as scheduled.

While the AEC acknowledges the costs involved in being scheduled, it states that these costs have fallen substantially in recent years with developments in control and communication technologies greatly reducing the costs of becoming scheduled.<sup>31</sup> The AEC notes the Commission's decision in 2017 to maintain the current thresholds was due to the costs associated with being scheduled, which the Commission at the time determined to be material.<sup>32</sup>

## 2.3 **Issues for consultation**

The Commission is seeking stakeholder feedback on the materiality of the issue the AEC has raised and its proposed solution, including whether there are alternative solutions that should be considered.

### 2.3.1 **The materiality of the issue identified by the AEC**

The Commission is seeking stakeholder feedback in relation to the extent of the issues relating to the:

- level of non-scheduled generation in the NEM
- performance of central dispatch and forecasting.

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<sup>29</sup> Ibid, pp. 3-4.

<sup>30</sup> Ibid, pp. 2 and 4.

<sup>31</sup> AEC, *Generator registration thresholds — rule change request*, p. 2.

<sup>32</sup> Project page for the *Non-scheduled generation and load in central dispatch* rule change is available [here](#). The scope of the ENGIE rule change request which led to the Commission's decision in 2017 is very similar to the rule change request being considered here.

### Non-scheduled generation in the NEM

As set out above in section 2.1, the AEC raises concern about the increasing proportion of non-scheduled generation in the NEM.<sup>33</sup> The Commission has examined the existing quantity of generation in the NEM by classification and how this has changed over time in order to confirm whether there has been an increase in the amount of non-scheduled generation in the NEM. Table 2.1 and Table 2.2 show the existing quantity of registered generation in the NEM by classification with respect to total nameplate capacity and the number of generating units respectively as of 14 September 2020.

**Table 2.1: Registered generation in the NEM (MW) (September 2020)**

<b>GENERATOR SIZE GROUPINGS</b>	<b>SCHEDULED</b>	<b>SEMI-SCHEDULED</b>	<b>NON-SCHEDULED</b>
Above 30 MW	41,780 MW	10,782 MW	3,157 MW
15 MW — 30 MW	462 MW	152 MW	752 MW
10 MW — 15 MW	—	23 MW	167 MW
5 MW — 10 MW	—	15 MW	176 MW
Below 5 MW	—	—	96 MW
<b>Total</b>	<b>42,241 MW</b>	<b>10,971 MW</b>	<b>4,348</b>
<b>% of total</b>	<b>73.51%</b>	<b>19.09%</b>	<b>7.55%</b>

Source: AEMO, *NEM registration and exemption list*, 9 August 2020, available [here](#).

**Table 2.2: Registered generation in the NEM (# generating units) (September 2020)**

<b>GENERATOR SIZE GROUPINGS</b>	<b>SCHEDULED</b>	<b>SEMI-SCHEDULED</b>	<b>NON-SCHEDULED</b>
Above 30 MW	164 units	95 units	28 units
15 MW — 30 MW	18 units	6 units	32 units
10 MW — 15 MW	—	2 units	13 units
5 MW — 10 MW	—	2 units	25 units
Below 5 MW	—	—	45 units
<b>Total</b>	<b>182 units</b>	<b>105 units</b>	<b>144 units</b>
<b>% of total</b>	<b>42.23%</b>	<b>24.36%</b>	<b>33.41%</b>

Source: AEMO, *NEM registration and exemption list*, 9 August 2020, available [here](#).

We have the following observations from the data in these two tables:

<sup>33</sup> Ibid, p. 2.

- There is currently 4,252MW of registered non-scheduled generation capacity from generating units with a nameplate capacity greater than 5 MW. This represents approximately 7.5 per cent of total registered generation capacity in the NEM.
- Non-scheduled generators represent approximately one third of all registered generating units in the NEM. Approximately 70 per cent of these non-scheduled generating units are below 30 MW in size.

The Commission has also examined how the quantity of non-scheduled generation in the NEM has changed over time to observe how quickly operational challenges related to non-scheduled generation might occur for AEMO. Table 2.3 summarises this change from 2010 to 2020, Figure 2.1 shows how non-scheduled generation's proportion of total nameplate capacity in the NEM has changed over time and Figure 2.2 shows how each jurisdiction's penetration of non-scheduled generation has changed over time. When considering how non-scheduled generation's proportion of total generation has changed over time, it is important to note that scheduled and semi-scheduled generation capacity has fluctuated significantly over this time period as well. While this rule change request is considering changes in non-scheduled generation capacity, changes to scheduled and semi-scheduled generation could be attributed to the retirement of the ageing thermal fleet and the significant entry of new variable generation assets, respectively.

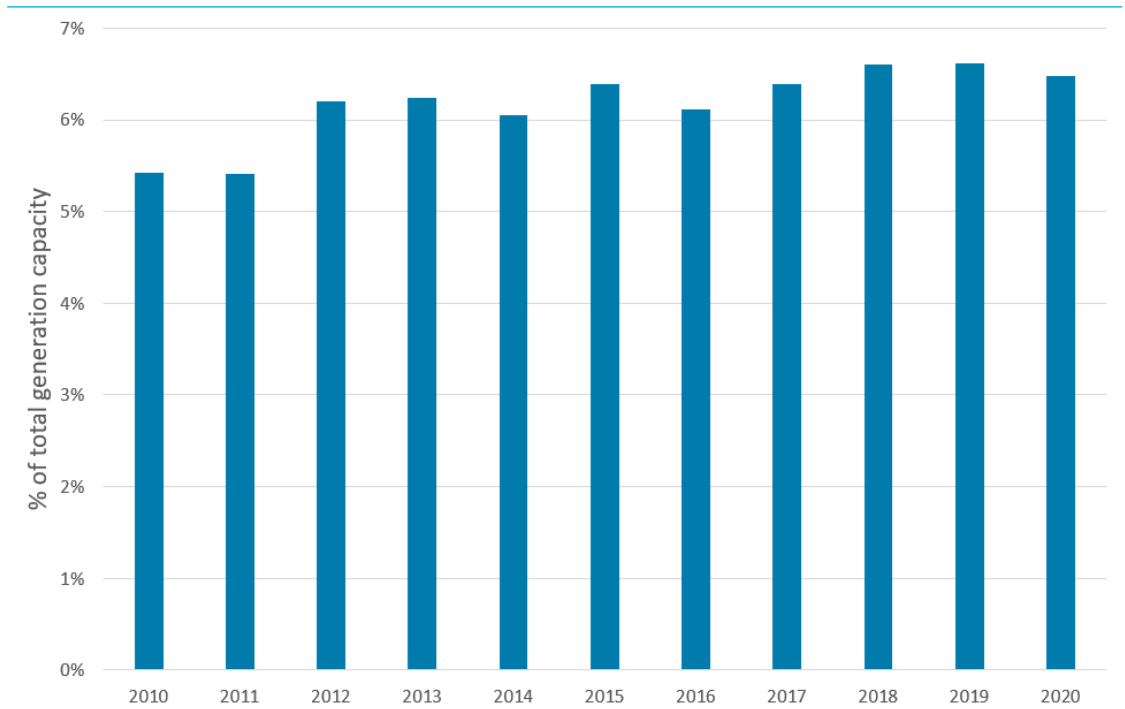
**Table 2.3: Proportion of registered non-scheduled generation nameplate capacity in the NEM**

<b>YEAR</b>	<b>NON-SCHEDULED GENERATION (MW)</b>	<b>SCHEDULED AND SEMI-SCHEDULED GENERATION (MW)</b>	<b>NON-SCHEDULED GENERATION PROPORTION OF TOTAL GENERATION (%)</b>
2010	2,645	46,162	5.4%
2011	2,645	46,204	5.4%
2012	3,080	46,559	6.2%
2013	3,124	36,909	6.2%
2014	3,044	47,244	6.1%
2015	3,280	48,089	6.4%
2016	2,980	45,729	6.1%
2017	3,065	44,906	6.4%
2018	3,332	47,146	6.6%
2019	3,620	51,080	6.6%
2020	3,616	52,242	6.5%

Source: AEMO, Generator information page, available [here](#).

Note: The discrepancy between Table 1.3 and Table 1.1 is due to the fact that these data are compiled from different AEMO sources: the generator information page and the NEM registration and exemption list respectively. This table is used as the basis for Figure 2.1 and Figure 2.2.

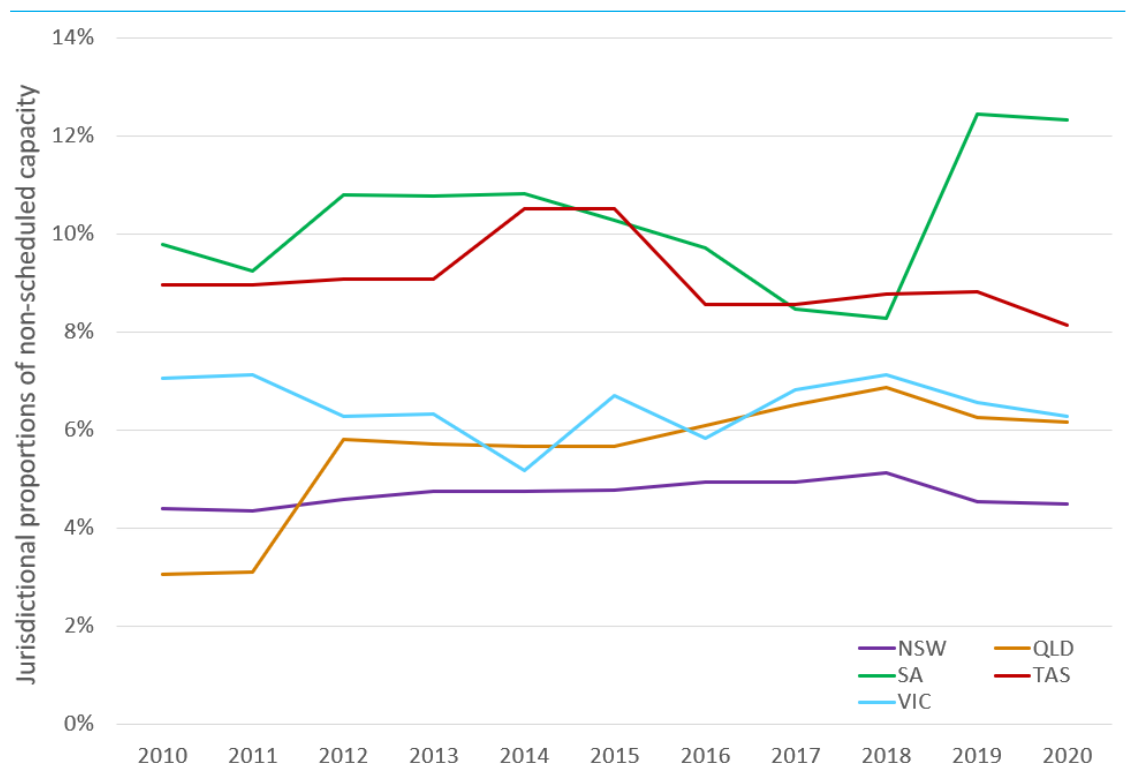
**Figure 2.1:** Non-scheduled generation's proportion of total registered nameplate capacity in the NEM



Source: AEMO, Generator information page, available [here](#).



**Figure 2.2: Non-scheduled generation capacity as a proportion of total generation capacity per jurisdiction**



Source: AEMO, Generator information page, available [here](#)

The following observations can be drawn from this analysis. Since 2010:

- non-scheduled generation's proportion of total generation remains low but has increased by just over 20 per cent from 5.4 per cent to 6.5 per cent of total generation
- the total capacity of scheduled and semi-scheduled generation has increased by approximately 6,000 MW (13 per cent) whereas the total capacity of non-scheduled generation has increased by 1,000 MW (37 per cent)

In addition, since 2017, the penetration of non-scheduled generation has increased significantly in South Australia to around 12 per cent of its total generation capacity, whereas this penetration has fallen in all other jurisdictions. This may mean that the issues identified by the AEC relating to AEMO's ability to efficiently manage the system are more significant in South Australia compared to other jurisdictions in the NEM.

While the quantity of non-scheduled generation was inconsequential when the NEM began in 1998, the analysis above shows that this is changing. According to AEMO, another 1,253 MW of non-scheduled generation has been either proposed or committed by market participants

for future projects, noting that 1,031 MW of this is set to come from solar and wind assets.<sup>34</sup> This suggests that growth in non-scheduled generation is set to continue.

**QUESTION 2: ISSUE IDENTIFIED BY AEC - INCREASE IN NON-SCHEDULED GENERATION IN THE NEM**

1. Do you agree with the AEC that transition in the NEM's generation mix is trending towards having a greater proportion of non-scheduled generation?
2. Do you expect the capacity of non-scheduled generation as a proportion of total generation capacity to maintain the same growth trend into the future? If not, how do you expect this trend to change over time?

**The performance of central dispatch and forecasting**

The AEC expresses concern that this growth in non-scheduled generation will put the accuracy of the forecasting and market scheduling process at risk. Consequently, the Commission is seeking stakeholder feedback on the current performance of this process and how this might change over time.

Although AEMO creates a variety of forecasts for electricity demand in the NEM for different purposes, one particularly important forecast of electricity demand prepared and published by AEMO is the pre-dispatch schedule.

The pre-dispatch schedule is required to be published by AEMO under the NER.<sup>35</sup> It includes quantities of scheduled and semi-scheduled generation, scheduled load and projected demand for all trading intervals (30-minute period) covering the period from the current trading interval up to and including the last trading interval for which participants have provided bids.<sup>36</sup>

The primary purposes of the pre-dispatch schedule is to provide:<sup>37</sup>

- market participants with sufficient unit loading, unit ancillary service response and pricing information to allow them to make informed business decisions
- AEMO with sufficient information to allow it to fulfil its duties in accordance with the rules, in relation to system reliability and security.

A major output of the pre-dispatch schedule is the provision of forecast spot prices for energy and FCAS markets for each region of the NEM.<sup>38</sup> The accuracy of this output is crucial for the efficiency of dispatch outcomes in the NEM as they are used by participants to inform their decision-making in real time up to a day ahead.

34 AEMO, *NEM generation information July 2020 v2*, available [here](#).

35 Clause 3.8.20 of the NER.

36 Each participant is required to submit initial price-quantity bids for each of the 30-minute trading intervals to AEMO by 12:30pm the day before trading, with quantity rebids permitted up until the final five minute pre-dispatch interval.

37 AEMO, *Pre-dispatch process description*, 14 November 2016, p. 7, available [here](#).

38 *Ibid*, pp. 11.

The Commission completed an evaluation of this output as part of the draft determination for the *Non-scheduled generation in central dispatch* rule change in 2017.<sup>39</sup> The findings of this analysis can be summarised as follows:<sup>40</sup>

- the divergence between pre-dispatch and dispatch price outcomes ranged between 4.4 and 7.3 per cent across the different NEM jurisdictions
- five-minute pre-dispatch price forecasts were noticeably more accurate than 30-minute forecasts, which is at least partly reflective of the price signalling process these forecasts provide to the market
- forecast prices of less than \$300/MWh almost always occurred, whereas higher price forecasts had a lower accuracy and tended to not eventuate. The Commission noted that \$300/MWh is a common market contract price for caps which limits a consumer's exposure to high price events, and is therefore an indication that the market was responding as intended to high price forecasts by reducing load and increasing generation
- the divergence between pre-dispatch and dispatch price outcomes materially increased between 2014 and 2017.

**QUESTION 3: ISSUE IDENTIFIED BY AEC — THE FORECASTING AND DISPATCH PROCESS**

Do you consider that the current penetration of non-scheduled generation in the NEM is causing difficulties or inefficiencies in the forecasting and market scheduling process?

### 2.3.2

#### Assessment of the proposed solution

This section discusses and seeks stakeholder feedback on the appropriateness of the AEC's proposed solution. This includes seeking feedback on the other solutions which could be considered to address the issues the AEC has raised.

As discussed in section 2.2.1, the AEC proposes to lower the scheduling threshold in the NEM to address the issue of the increasing amount of generation not participating in central dispatch. The AEC also sets out what it expects the costs and benefits of this proposed change to be, as discussed in section 2.2.2.

Broadly, these costs and benefits can be characterised as a trade off between improvements in the efficiency of the forecasting and dispatch process to enable improved management of the power system, and the costs that scheduling would impose on smaller generating units — where these costs may reduce competitive rivalry from these smaller generators. While the AEC suggests that the costs of becoming scheduled are not material relative to the benefits of increasing the extent of scheduled generation in the NEM,<sup>41</sup> this conclusion contrasts with

<sup>39</sup> AEMC, *Non-scheduled generation and load in central dispatch*, draft determination, pp. 90 - 102, available [here](#).

<sup>40</sup> *Ibid*, p. 96.

<sup>41</sup> AEC, *Generator registration thresholds - rule change request*, p. 2.

the Commission's 2017 decision to not make a rule for the *Non-scheduled generation and load in central dispatch* rule change project.<sup>42</sup> A key factor in that decision was the material establishment and maintenance costs existing and prospective participants would face in becoming scheduled participants.<sup>43</sup>

If this remains the case, the AEC's proposal for a change in the scheduling threshold to apply only to new generators should reduce the total costs. By proposing that AEMO's existing practise of grandfathering apply to generators classified inconsistently with this change, these costs would only be borne by prospective generators rather than those already participating in the NEM. However, this reduction in costs would also reduce this proposal's impact on improving the management of the power system compared to a situation where it would apply to all participants.

It is also important to consider how changing the size threshold for classifying generators as non-scheduled might interact with the Australian Energy Regulator's (AER) *Semi-scheduled generator dispatch obligations* rule change request.<sup>44</sup> The rule change request from the AER, which is seeking to change the scheduling obligations for semi-scheduled generators, could, if made, place additional costs on prospective intermittent generators. Therefore, if the Commission decided to reduce the threshold as proposed by the AEC from 30 MW to 5 MW and make the rule requested by the AER, then several new intermittent generators would be classified as semi-scheduled and would need to comply with additional obligations proposed by the AER. This consideration is important given that, as noted in section 2.3.1, 1031 MW out of the 2,351 MW forecast non-scheduled generation capacity by AEMO is planned to come from intermittent generation assets.<sup>45</sup>

### Scheduling costs estimates

In one of the rule change requests which made up the *Non-scheduled generation and load in central dispatch* rule change project, ENGIE proposed to reduce the scheduling threshold for non-intermittent generators from 30 MW to 5 MW as one option for increasing the efficiency of the forecasting and dispatch process.<sup>46</sup>

To justify the reduction of the scheduling threshold for all non-intermittent generators to 5MW, ENGIE supplied estimates of what it believed the establishment and ongoing costs of these scheduling systems to be, for each affected generator. These are set out below:<sup>47</sup>

- establishment costs:
  - communication platform to send bids and receive dispatch instructions (\$10,000)
  - internal resources to establish policy and procedures (40 hours) (\$3,000)
- ongoing costs:

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42 AEMC project page available [here](#).

43 AEMC, *Non-scheduled generation and load in central dispatch*, final determination, available [here](#).

44 AEMC project page available [here](#).

45 AEMO, *NEM generation information July 2020 v2*, available [here](#).

46 ENGIE, *Non-scheduled generation in central dispatch — rule change request*, pp. 5-6, available [here](#).

47 *Ibid*, p. 11.

- preparing, submitting and responding to dispatch (2-10 hours per week) (\$7,500 to \$37,500 per annum).

ENGIE also estimated that these costs for non-scheduled generators already active in the market would be lower, and that the costs to AEMO would be minimal. However, it did not provide any dollar estimates of what these costs would be.<sup>48</sup>

In its submission to the consultation paper for that rule change request, SA Water offered estimated costs of compliance for operating its generation assets as scheduled generators.<sup>49</sup> These estimates were as follows:<sup>50</sup>

- establishment costs: \$95,000
  - hardware and communications (\$20,000)
  - control software configuration and integration (\$10,000)
  - project management (\$5,000)
  - preparation of internal procedures and processes (\$10,000)
  - development of bidding system (\$50,000)
- ongoing costs: \$260,000 per annum
  - internal compliance monitoring (\$20,000)
  - maintenance of systems/processes (\$20,000)
  - monitoring of obligations under the NER (\$20,000)
  - bidding/rebidding activities (\$200,000).

Furthermore, at an AEMC industry workshop conducted in March 2017, the following observations were made:<sup>51</sup>

- the costs of participating in central dispatch could be up to \$10 million per annum for a participant that is actively trading during business hours
- companies can contract out the trading activities and this would reduce their costs, depending on their levels of bidding and rebidding activity (however these parties would still incur significant compliance and legal costs).

Implementation and ongoing costs are an important consideration in assessing the AEC proposal. The Commission is seeking stakeholder feedback on what these costs might be.

#### QUESTION 4: ASSESSMENT OF THE PROPOSED SOLUTION

1. Do you consider that lowering the threshold for classifying new generators as non-scheduled would help to address the issues the AEC has identified for the efficient management of the power system? Why or why not?

48 Ibid.

49 SA Water operates small non-scheduled wastewater treatment generators. Its submission is available [here](#).

50 Ibid, p. 118.

51 Ibid, p. 119.

2. How much of an improvement to the accuracy of AEMO's forecasts would scheduling new generators above 5 MW nameplate capacity have, compared with requiring this of all new and existing generators above this size?
3. Do you think the costs associated with the AEC's proposal to reduce the thresholds have been adequately captured? How would these costs vary depending on whether the generator was scheduled or semi-scheduled?
4. Do you agree with the AEC that the costs of participating in central dispatch have fallen to the extent where the market benefits of increasing the proportion of scheduled generation outweighs the costs to participants? Why or why not?
5. Do you agree with the AEC that its proposed scheduling threshold does not need to be made consistent with the thresholds that apply to system security management and technical connection requirements? Why or why not?
6. If made, should the AEC's rule change only apply to new generating units at the time of their registration and AEMO's existing practise of grandfathering the changes apply to existing generators registered inconsistently with the new provision?

If stakeholders are of the view that it is not appropriate to implement the AEC's solution now, the Commission is seeking feedback on how this could change over time. Theoretically, assuming a continuous growth in the extent of non-scheduled generation in the NEM, eventually the penetration of non-scheduled generation will reach a level where the effective operation of the forecasting and scheduling process will be compromised due to insufficient visibility over the generation mix. Therefore, the Commission is seeking feedback on whether stakeholders consider that this threshold is approaching and what we should do about it when it arrives.

#### **QUESTION 5: TIMING OF THE PROPOSED SOLUTION**

1. Do you consider that the penetration of unscheduled generation has reached a level where a decision needs to be taken to lower the thresholds to require this generation to participate in central dispatch? Why or why not?
2. If not, what level of penetration would need to be reached before it is warranted to place more scheduling obligations on this category of generator?

### **2.3.3**

#### **Alternative or additional solutions**

The remainder of this chapter seeks stakeholder feedback on alternative or additional solutions which could be used to address the issues identified by the AEC if the proposed solution is not considered appropriate or sufficient. These potential alternative or additional solutions are discussed in the following sub-sections:

- implementing a different scheduling threshold

- alternative scheduling arrangements for new non-scheduled generators.

#### Implementing a different scheduling threshold

If stakeholders consider that the costs of being scheduled for generators in the 5-30 MW size range remain prohibitive, the Commission considers that there may be merit in examining whether a different scheduling threshold could apply. In its rule change request, the AEC makes it clear that its proposal to reduce the scheduling threshold to 5 MW is due to AEMO's current practice of automatically granting generator registration exemptions for systems less than 5 MW in size.<sup>52</sup> Aside from being a feature of AEMO's registration procedures, there appears to be no technical or economic basis for using 5 MW as the threshold for generator participation in central dispatch. AEMO affirmed this position in its submission to the 2016 *Non-scheduled generation and load in central dispatch* consultation paper:<sup>53</sup>

AEMO's exemption criteria of 5 MW has no technical or economic basis for determining the appropriate level for the central dispatch process. The threshold for inclusion in dispatch would need to be separately determined and not associated with the registration exemption criteria. A review would identify the best approach to account for small generation.

Therefore, the Commission is also seeking stakeholder feedback on whether a different threshold for participating in central dispatch should be considered, and if so, what this new threshold should be. To facilitate a discussion of what this new threshold could potentially be, Table 2.4 features a breakdown of existing registered non-scheduled generators by generator size groupings.

**Table 2.4: Number of existing non-scheduled generators in the NEM by generator size groupings**

<b>GENERATOR SIZE GROUPING</b>	<b>NUMBER OF GENERATORS</b>	<b>% OF TOTAL REGISTERED NON-SCHEDULED GENERATORS IN THE NEM</b>
Above 30 MW	28	19.4%
15M — 30 MW	32	22.2%
10 MW — 15 MW	14	9.7%
5 MW — 10 MW	25	17.4%
Below 5 MW	45	31.3%
Total	144	100%

Source: AEMO, *NEM registration and exemption list*, 9 August 2020, available [here](#).

The following observations can be made about this data:

<sup>52</sup> AEMO, *Guide to generator exemptions and classification of generating units*, p. 7.

<sup>53</sup> AEMO, *Non-scheduled generation and load in central dispatch rule 2016 consultation — AEMO submission*, p. 4, available [here](#).

- approximately a third of registered non-scheduled generators in the NEM are below 5 MW
- approximately half of all registered non-scheduled generators in the NEM are 5 MW to 30 MW in size.

It might also be worthwhile considering if factors other than the size of a generator should factor into the assignment of central dispatch obligations. Given the proliferation of emerging generation technologies with significant differences in technical capabilities and the practical effect this has for participation in central dispatch, generator technologies could potentially be used as criteria for this participation. Using technology to differentiate generator obligations is already done in the NER, to an extent, as generators with intermittent output are to be classified as semi-scheduled,<sup>54</sup> and by AEMO in its exemption and classification guide<sup>55</sup> by way of the special treatment given to battery storage facilities throughout it.<sup>56</sup> However, this approach of having different obligations for different technologies may not be consistent with the direction that the ESB's two-sided market reforms are headed, in terms of basing obligations on the kinds of services provided to the market. As such, another alternative might be to assign these obligations to a particular type of generator that is difficult to centrally forecast due to either the variability or price responsiveness of its generation.

**QUESTION 6: IS THE PROPOSED THRESHOLD OF 5 MW NAMEPLATE CAPACITY APPROPRIATE?**

1. Do you believe AEMO's 5 MW generator registration exemption threshold would serve as a reasonable threshold for participation in central dispatch? If not, what do you think this threshold should be?
2. Do you think that factors other than the size of a generator should factor into whether a generator is required to participate in central dispatch? If so, what should these other factors be?

**Alternative scheduling arrangements for small generators**

If stakeholders consider the costs of being scheduled or semi-scheduled for generators in this size range remain prohibitive, there may be merit in examining whether different scheduling arrangements could apply. As identified by the AEC, there is possibly value in AEMO having greater oversight of this growing category of non-scheduled generation in the NEM<sup>57</sup> by virtue of correcting the associated effects of inefficiencies in the forecasting and market scheduling process. But, as considered by the Commission in 2017 in the decision to not make a rule for the *Non-scheduled generation and load in central dispatch* rule change project<sup>58</sup>, there is clearly a trade off between the benefits to be gained for the operation of

54 NER clause 2.2.7(a).

55 Available [here](#)

56 AEMO, *Guide to generator exemptions and classification of generating units*, p. 7 and 14.

57 AEC, *Generator registration thresholds - rule change request*, pp. 3-4.

58 AEMC, *Non-scheduled generation and load in central dispatch*, final determination, available [here](#).



the market in mandating scheduling and the costs of this for generators in the size range being considered in this rule change request. Just as these benefits will likely increase as the proportion of non-scheduled generation in the NEM increases, so too might these costs of scheduling operate as a significant barrier to market entry.

A potential means of balancing these interests to arrive at an effective solution is to consider whether new non-scheduled generators should be bound by an alternative set of less burdensome scheduling requirements. The Commission is therefore interested in stakeholder views about whether a reduced set of scheduling requirements would be appropriate for new small generators, with the intent to optimise the information about these generators to AEMO at least cost to participants. The Commission also wants stakeholder views on what type of minimal scheduling arrangements would still result in benefits for the NEM and AEMO's operation of it.<sup>59</sup>

Furthermore, it is possible that implementing alternative arrangements for these new, smaller generators could involve increasing the complexity and system costs involved in AEMO's operation of the power system — and that this will need to be counted against any prospective benefits this might bring to the forecasting and scheduling process. Therefore, the Commission is seeking stakeholder feedback on how and to what extent the implementation of these alternative arrangements might increase AEMO's system costs.

In considering what types of information should be required from generators between 5 MW and 30 MW, it may be helpful to go back to first principles and consider the characteristics of the information that should be provided. This includes considering what information would be both:

- accessible and not too costly or onerous for generators between 5 and 30 MW to provide
- valuable, in terms of making a meaningful improvement on system and market operation outcomes.

Transpower, New Zealand's system operator, offers an example of what these alternative arrangements might look like in its dispatch-capable load station (DCLS) market participant category.<sup>60</sup> The DCLS category is the Electricity Authority's means of providing a more suitable and convenient mechanism for improving the efficiency of the forecasting and dispatch process and encouraging greater demand side participation.<sup>61</sup> Retailers or elected third parties are able to classify loads as a DCLS, which make the retailer or third party a dispatchable load purchaser. These dispatchable load purchasers then submit bids that form prices and feed into pre-dispatch schedules and they receive dispatch targets with compliance obligations that are more lenient than those applied to generators. These purchasers can nominate periods when they do not want to participate in central dispatch and can decline an instruction so long as they immediately re-offer. Transpower has absolute

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59 [The Commission is aware that due to their unique operating characteristics battery storage facilities currently face more strenuous scheduling arrangements despite their modularity. The Commission is not proposing that these kinds of arrangements extend to these assets.](#)

60 More information available [here](#).

61 For a more in depth discussion about how the dispatch guidelines apply to a DCLS refer to: Transpower, *Operations guideline: issuing dispatch instructions to a dispatch-capable load station*, 8 August 2019, available [here](#).

discretion on the decision to remove them from the process if the dispatchable load does not follow dispatch targets.

The wholesale demand response mechanism to be introduced in the NEM in 2021 is another example of modified participation in scheduling and central dispatch for certain entities - in this case, demand response service providers.<sup>62</sup>

#### QUESTION 7: ALTERNATIVE SOLUTIONS

1. Do you have any suggestions for information which would satisfy these criteria to make the existing scheduling framework more accessible for small generators?
2. Would AEMO's forecasting and market scheduling process benefit from partial visibility of non-scheduled generators?
3. Can you suggest ways that participants could provide this information without becoming bound to the obligations of the existing dispatch process? Would the New Zealand approach, or the approach taken in relation to wholesale demand response in the NEM, be appropriate?
4. Do you consider the benefits of implementing these alternative arrangements would outweigh the prospective additional system costs they might impose on the market by increasing the complexity of AEMO's operations?

Notably, these kinds of arrangements are similar to those being considered under the ESB's two-sided market work stream. Although the move towards a two-sided market is more broadly focused on improving the accessibility and flexibility of the demand side of the NEM to facilitate more efficient market outcomes,<sup>63</sup> increasing participation in central dispatch on the supply side is still a key part of the move towards a two-sided market. A potential mechanism for achieving these supply side outcomes is to evolve the existing scheduling obligations in a 'lite' manner, that is, a set of scheduling obligations that make it easier for currently unscheduled participants to participate in central dispatch while still maintaining the integrity of central dispatch.<sup>64</sup>

In addition, moving towards more similar obligations applying to all providers of generation in the NEM (compared to the current approach where the obligations of scheduled generators are very different from those of non-scheduled generators) is consistent with the services-based approach proposed to be taken in a two-sided market. Under this approach, obligations are imposed with reference to the services provided to the NEM, rather than being based on the entity's participant category or type of technology.<sup>65</sup>

62 Further information available here: <https://www.aemc.gov.au/rule-changes/wholesale-demand-response-mechanism>.

63 ESB, *Post 2025 market design*, consultation paper, p. 86, available [here](#).

64 *Ibid*, p. 93.

65 *Ibid*, p. 91.

## 3 EXEMPTIONS IN THE REGISTRATION PROCESS

The AEC's and Mr Vermeer's rule change requests are concerned with exemptions in the registration process. The Commission is seeking stakeholder feedback on the significance of the issues raised, the appropriateness of the proposed solutions and whether there are alternative solutions that should be considered.

This chapter outlines the:

- issues identified by the AEC and Mr Vermeer
- proposed solutions, and
- matters for consultation.

### 3.1 The issues identified by the proponents

The AEC and Mr Vermeer both identify a lack of certainty and transparency in the registration process regarding exemptions from the registration requirement and in relation to the process of classifying generating units as scheduled, semi-scheduled or non-scheduled. The AEC considers that the NER enable AEMO to exempt too many generators from the requirement to participate in central dispatch and that there is not sufficient transparency surrounding these decisions. Mr Vermeer is concerned that the exemptions for embedded generators, in the 5 -30 MW nameplate range, are granted too late in the registration process, which causes uncertainty for investors in these generating units.

#### 3.1.1 The exemption issues identified by the AEC

##### The grounds for exempting generators from scheduling obligations

The AEC is concerned that the circumstances set out in the NER that determine the whether a generating unit can be classified as non-scheduled are too broad and this impacts on AEMO's ability to control the power system. Currently, the NER allow AEMO to exempt generators from being scheduled where it is satisfied that:

1. the primary purpose of the generating unit is local use and it would rarely, if ever, send out electricity above the 30 MW threshold<sup>66</sup>
2. the physical attributes of the relevant generating units mean it would not be practicable for it to participate in central dispatch.<sup>67</sup>

In relation to the first test, the AEC raises that the potential for a generator to impact scheduling and dispatch should be a more important consideration, as opposed to how regularly a generator may send out electricity about 30 MW. The AEC points out that some large generators have avoided being scheduled simply because they have unusual connection point configurations and that sent out generation should not be a consideration when assessing a generator's importance in the dispatch and scheduling process.<sup>68</sup> To illustrate its

<sup>66</sup> Clause 2.2.3(b)(1) of the NER.

<sup>67</sup> Clause 2.2.3(b)(2) of the NER.

<sup>68</sup> AEC, *Generator registration thresholds – rule change request*, p. 3.

point, the AEC refers to the now closed 150 MW Anglesea coal power station in Victoria, which was classified as non-scheduled because it shared its connection point with the Point Henry aluminium smelter 40 km away.<sup>69</sup> The AEC believes this power station was wrongly classified as non-scheduled as it impacted the NEM's supply-demand balance to the same extent as other scheduled generators of similar size, regardless of its classification.<sup>70</sup>

The AEC is also concerned that the ability to participate in central dispatch should be assessed on the basis of the physical attributes of the generating system as a whole and not on individual units. The AEC notes the proliferation of small units aggregated to form large generating systems and considers it problematic that such large generating systems are granted exemptions from being scheduled. It raises concern about the consequences for the power system if AEMO does not factor the output of large non-scheduled generating systems into its forecasting and dispatch processes, contributing to inaccuracies and inefficiencies in these processes.<sup>71</sup>

### **Transparency surrounding exemption and classification decisions**

Under clause 2.2.1(c) of the NER, AEMO may, in accordance with its guidelines, grant exemptions to persons from being registered as a generator, subject to such conditions that AEMO deems appropriate. Currently, AEMO provides standing exemptions for generators under 5MW as per its Exemption Guide.<sup>72</sup>

While the AEC does not object to AEMO having the ability to grant exemptions, it is concerned that the NER do not require AEMO to publish its reasons for granting them. The AEC believes that this does not promote sufficient transparency of AEMO's decision-making and is causing a lack of clarity around generator registration requirements. The AEC believes that this is also the case for AEMO's decision-making when it comes to the classification of generators.

As an example, the AEC notes the reclassification of the nine 30.8 MW SA Temporary Generation units from scheduled to non-scheduled. These units which have registered capacities of 154 MW (North) and 123.2 MW (South), making a total of 277 MW — more than 8 per cent of South Australia's historical peak demand of 3,397 MW at the time of the reclassification.<sup>73</sup> The AEC states that it "suspects that this reclassification was not justified, and may have consequential market effects"<sup>74</sup> despite the fact that these generating units have "the technical capacity to follow dispatch processes."<sup>75</sup>

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69 Ibid.

70 Ibid.

71 Ibid, pp. 2-3.

72 Available [here](#).

73 Ibid, p.3.

74 Ibid.

75 Ibid.

### 3.1.2 The exemption issues for embedded generators identified by Mr Vermeer

Mr Vermeer is concerned that, under the NER, applications by embedded generators between 5-30 MW to be exempt from the requirement to register as a generator<sup>76</sup> are determined too late in the process. Mr Vermeer explains that, in his experience as a consultant working with these applicants, there is a great deal of confusion about the obligations and technical standards that will apply, which depend on whether the exemption application is granted or not. Mr Vermeer says that this confusion has “negatively impacted the project budget and schedule for these connection applicants.”<sup>77</sup> Mr Vermeer believes this prevents “efficient investment in generation co-located with large, distribution connected load.”<sup>78</sup> Mr Vermeer suggests this barrier is preventing these customers from achieving a reduction in their electricity costs and an associated carbon offset.

As explained by Mr Vermeer, embedded generators in the 5-30 MW range are typically co-located with load and connected to a distribution network at voltages typically less than 66kV. There are currently 71 exempt embedded generators with a nameplate capacity of 5-30 MW in the NEM.<sup>79</sup> Such facilities include universities, industrial and processing facilities, warehouses, airports, hospitals and prisons.<sup>80</sup>

Mr Vermeer explains that these businesses typically want to be exempt from being a registered participant under the NER because of “the impacts to current retail electricity agreements combined with the fact that such business’ primary purpose is not to operate a power station.”<sup>81</sup> Mr Vermeer claims that “these customers simply wish to offset their electricity usage in a similar fashion to a residential household with rooftop solar PV.”<sup>82</sup>

It is Mr Vermeer’s understanding that currently, generators with a nameplate capacity greater than AEMO’s standing exemption threshold (5 MW) must apply to connect under Chapter 5 of the NER, even if they are seeking an exemption from registration as a generator from AEMO. Connecting under Chapter 5 entails a longer and more rigorous connection process than under Chapter 5A. However, connection under Chapter 5A cannot occur until AEMO approves an exemption.

In Mr Vermeer’s view, the NER does not provide sufficient clarity about the connection pathways for ‘intending exempt participants’ and this means the connection obligations are unclear. This results in “connection delays and misunderstandings in responsibilities, timeframes and the level of expected detail”.<sup>83</sup> Mr Vermeer provides a sample of the connection documentation of Distribution Network Service Providers (DNSPs) in his rule change request, to highlight the ambiguities faced by an ‘intending exempt participant’ where only one of the DNSP documents clearly references Chapter 5.3A of the NER.<sup>84</sup>

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76 These are referred to as ‘intending exempt participants’.

77 Ibid, p. 1.

78 Ibid, p. 1.

79 AEMO, *NEM registration and exemption list*, available [here](#), accessed 20 September 2020.

80 Mr Vermeer, *Improving connection process for embedded generators - rule change request*, p. 1.

81 Ibid.

82 Ibid.

83 Ibid, p 4.

84 Ibid, p. 6.

Mr Vermeer explains that 'intending exempt participants' can only apply to be exempt from registration as a generator very late in the project's development, usually after the procurement of generating equipment and often after executing the connection agreement.<sup>85</sup> To illustrate this point, Mr Vermeer provides the example of a generator (5-30 MW) who was asked to provide generator nameplate photos prior to finalising the exemption, which means the connection applicant had to have already procured the equipment. In another example provided by Mr Vermeer, a generator received an exemption only 10 business days prior to the generating system being commissioned. At the time of the exemption being granted, all generating equipment had been purchased and was installed on site.<sup>86</sup>

Mr Vermeer also explains that there is significant confusion created in relation to Generator Performance Standards (GPS) as it is not clear whether they apply until such time as AEMO provides the relevant exemption. While clause S5.2.1(b) of the NER states that the standards do not apply to generating systems that are either exempt from registration or eligible to be exempt under clause 2.2.1(c) of the NER, it is not known whether the exemption will be granted and although the applicant believes they are eligible to be exempt, they cannot be sure whether AEMO will ultimately confirm this view.<sup>87</sup>

Mr Vermeer notes that as AEMO has absolute discretion in the matter of granting the exemption, it is difficult to anticipate what its final decision will be. The risk of the exemption not being granted is a concern for applicants who, by the stage the exemption decision is made, have already made significant investments in the embedded generation project.<sup>88</sup> As the applicant cannot be sure that AEMO will grant the exemption, they also cannot be sure whether they need to comply with the GPS and, according to Mr Vermeer, this places a significant burden on the applicant, which may not be reasonable given the size of the generating system. In addition, in the absence of an exemption, the connecting NSP and AEMO (during the clause 5.3.4A technical standards negotiation process) are forced to accept performance standards below the minimum access standard because of the inability of the 5-30 MW intending exempt generator to comply with them.<sup>89</sup>

## 3.2 The AEC's proposed solution

The AEC is proposing the following changes to the NER to address the issues it has raised about exempting generators from scheduling obligations:

- Firstly, narrowing the circumstances set out in the NER that AEMO can consider for classifying a generator as non-scheduled, thereby exempting it from participating in central dispatch.
- Secondly, including requirements in the NER to improve the transparency of AEMO's decisions to grant exemptions and classifications.

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85 Ibid. p.1

86 Ibid, p.5.

87 Ibid, p. 7.

88 Ibid, p. 4.

89 Ibid, p. 9.

The amendments are explained below.<sup>90</sup>

### **3.2.1 Narrowing the circumstances for exempting generators from scheduling obligations**

The AEC is seeking to remove from the NER the link between scheduling status and sent-out generation at the connection point.<sup>91</sup> This is because the AEC considers the presence of load between a generator's terminals and its network connection point is relevant only to market settlement, and is irrelevant to the generator's importance in the dispatch and scheduling process.<sup>92</sup>

The AEC also argues that it is no longer appropriate to provide an exemption to a generator from being scheduled or semi-scheduled based on the physical attributes of the individual generating units. Consequently, the AEC proposes that clause 2.2.3(b)(2) of the NER be amended so that it requires AEMO to consider whether the physical attributes of the generating system would make it impracticable for it to participate in central dispatch, rather than linking it to specific attributes of the individual units.<sup>93</sup>

The effect of these changes would likely mean that fewer generators would meet the criteria for being exempt from scheduling obligations, which would increase the number of generators contributing to AEMO's forecasting and dispatch processes. This, along with the AEC's other proposal discussed in the previous chapter to lower the thresholds for being scheduled, would, according to the AEC, have benefits for AEMO's control of the power system<sup>94</sup> which are summarised below.

### **3.2.2 Enhancing transparency surrounding AEMO's exemption and classification decisions**

The AEC proposes to insert two new clauses in the NER to enhance the transparency of AEMO's exemption and classification decisions:

- First, clause 2.2.1(c1), which would require AEMO to publish its reasons for providing a registration exemption for any generator with a nameplate rating larger than 5 MW within 10 business days of making its decision
- Second, clause 2.2.3(b1), which would require AEMO to publish the following if it granted a generator with a nameplate rating larger than 5 MW a non-scheduled classification:
  - the reasons for which the person sought the (re)classification
  - AEMO's reasons for granting the (re)classification
  - any conditions attached to such (re)classification.

The AEC states that having AEMO's reasoning in the public domain will:<sup>95</sup>

- improve the transparency of AEMO's decision-making processes and ensure industry is well-informed of exceptions to the generator registration requirements

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90 For more detail, including the AEC's proposed drafting, refer to the rule change request available on the project page [here](#).

91 Ibid, p. 7.

92 Ibid, p. 2.

93 Ibid, p. 7.

94 Ibid, pp. 3-4.

95 AEC, *Generator thresholds — rule change request*, p.2.

- improve industry’s understanding of the market, and has the potential for increasing market modelling accuracy, thereby leading to more efficient participation
- allow parties to dispute AEMO’s assessment, “should they feel minded to do so”.

### 3.3 Mr Vermeer’s proposed solution

Mr Vermeer is proposing amendments to the NER that would:

- provide a conditional exemption for embedded generation that have a nameplate capacity between 5 and 30 MW
- clarify the technical requirements for 5-30 MW exempt generators.

The amendments are explained below followed by Mr Vermeer’s assessment of the costs and benefits.<sup>96</sup>

#### 3.3.1 Create a conditional exemption for embedded generation

Mr Vermeer proposes that clause 2.2.1(c) of the NER be amended to allow AEMO to issue a ‘conditional’ exemption from the requirement to register as a generator for generators with a nameplate capacity between 5 and 30 MW who intend to be exempt. Mr Vermeer suggests that the conditional exemption should be valid for at least two years and could be subject to conditions such as:<sup>97</sup>

- negotiation of technical performance standards with the Connecting NSP
- providing evidence that a Registered Participant is financially responsible for all sent-out generation at the connection point
- final selection of the generator nameplate/size (insofar as the value remains below 30 MW)
- providing evidence of expected generation being less than 20 GWh per year
- any conditions which AEMO reasonably requires (such as reporting the total export of the system to AEMO each year).

Mr Vermeer considers that a conditional exemption would have the following benefits:<sup>98</sup>

- It resolves the ‘chicken-and-egg’ problem as:
  - with a conditional exemption, a future 5-30 MW generator who intends to be exempt can approach its Connecting NSP and demonstrate that AEMO has agreed that the generator meets the criteria of a ‘non-registered embedded generator’ and thus can progress a connection application under Chapter 5A
  - it removes the confusion where the Connecting NSP is unsure of its obligations or the connection pathway.

<sup>96</sup> For more detail, including Mr Vermeer’s proposed drafting, refer to the rule change request.

<sup>97</sup> Mr Vermeer, *Improving connection process for embedded generators — rule change request*, p. 11.

<sup>98</sup> Ibid.



- It provides certainty to the connection applicant that (subject to final demonstration of the exemption criteria to AEMO) it is eligible for an exemption and does not have to take on significant regulatory risk progressing a project.

In terms of the costs associated with this change, Mr Vermeer considers that the minor additional administrative burden imposed on AEMO by this process is expected to be substantially smaller than the current burden caused by the unclear and ambiguous rules (which often requires AEMO's involvement to resolve with the Connecting NSP).<sup>99</sup>

### 3.3.2 Clarify the technical requirements for 5-30 MW exempt generators

Mr Vermeer also proposes to amend the rules under Chapter 5A of the NER that cover the framework for negotiations between a DNSP and a connection applicant to clarify how they apply to generators in receipt of a 'conditional exemption.' This includes that the DNSP's technical requirements can be no more onerous than the respective automatic access standard as per Schedule 5.2, including any modifications in the generator's exemption.<sup>100</sup>

In addition, Mr Vermeer proposes to make it clear in the NER that Chapter 5A is preferred for non-registered embedded generators. To prevent ambiguity, clause 5.3A.1(b) is proposed to be modified to confirm that rule 5.3A applies only if a generator has elected to follow this process and Chapter 5A is the default connection process. Furthermore, Mr Vermeer suggests that table 5.1.2(d) of the NER include additional text to confirm that connection applicants who are subject to an automatic exemption or in receipt of a conditional exemption can progress a connection via Chapter 5A.<sup>101</sup>

In terms of the costs associated with the connection process needing to be resolved via the negotiation pathway in Chapter 5A, Mr Vermeer notes that there may be additional costs incurred by the NSP and AEMO but that these are expected to be insignificant.<sup>102</sup>

## 3.4 Issues for consultation

To assist in the assessment of the AEC's and Mr Vermeer's rule change requests, the Commission is seeking feedback on the following:

- the significance of the issues raised
- whether the proposed solutions are an appropriate response to the issues, including if there are alternative solutions that should be considered.

### 3.4.1 How significant are these issues?

The AEC and Mr Vermeer raised a number of issues with the exemption process for generators. In order to understand the materiality of these issues, the Commission welcomes stakeholder feedback on the following questions.

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99 Ibid.

100 Ibid, p.12.

101 Ibid, p.12.

102 Ibid, p.13.

#### QUESTION 8: EXEMPTION ISSUES - AEC

1. Do you share the AEC's concern about the impacts of generator exemptions and non-scheduled classifications on the number of generators (and proportion of total generation) subject to scheduling obligations? Why or why not?
2. Do you agree there is an issue with AEMO classifying generators as non-scheduled where it is satisfied that:
  - a. the primary purpose of the generator is local use and it would rarely, if ever, send out generation above 30 MW?
  - b. the individual generating units do not have the physical attributes to participate in central dispatch (regardless of whether they are part of a bigger system)?
3. Do you share the AEC's concern about a lack of transparency surrounding AEMO's decisions to provide generators with registration exemptions or classify their generating units as non-scheduled? Why or why not?

#### QUESTION 9: EXEMPTION ISSUES - MR VERMEER

What are your views on Mr Vermeer's concerns with the connection process for embedded generation owned, operated or controlled by entities that intend to be exempt from the requirement to register as a generator?

### 3.4.2

#### Are the proposed solutions appropriate?

In addition to assessing whether the issues raised by the AEC and Mr Vermeer are material, the Commission is also required to assess whether the proposed rules will, or are likely to, contribute to the achievement of the NEO (described in section 1.3), including considering whether the proposed rule change requests are in the long term interests of consumers.

#### The AEC's proposed solution

The AEC stated in its rule change request that based on the information available it appears that some generators may have been classified as non-scheduled without strong justification. This raises two questions:

1. whether the reasons for these decisions should be public, and
2. what factors should be considered when determining a generator's classification or exemption (in addition to nameplate rating).

AEMO can expect an increasing number of exemption applications if the trend in the NEM of greater amounts of small (i.e. 1-30 MW) generation continues and the Commission agrees to lower the threshold for becoming scheduled (or semi-scheduled), as discussed in the previous chapter. The AEC notes there may be minor additional assessment costs for AEMO,

which presumably includes the costs involved in assessing a larger volume of exemption applications.<sup>103</sup> The Commission notes that the proposal to narrow the scope for the granting of exemptions may assist AEMO by limiting the number of exemptions. Nevertheless, a greater number of exemption applications may increase the importance of AEMO publishing its reasons for its decisions.

To assist with the assessment of this rule change request, the Commission is seeking feedback on the exemption related solutions proposed by the AEC.

#### **QUESTION 10: EXEMPTION SOLUTIONS — AEC**

1. What are your views about the relative costs and benefits of the AEC's proposal to narrow the circumstances set out in the NER for exempting generators from the requirement to register or classifying generating units as non-scheduled?
2. Besides the nameplate capacity, what would you consider to be appropriate reasons to provide an exemption or classify a generating unit as non-scheduled, such that they are not required to participate in central dispatch?
3. Are you in favour of the NER requiring AEMO to publish its reasons for making these exemption and classification decisions? Why or why not?

#### **Mr Vermeer's proposed solution**

The Commission seeks stakeholder feedback about whether Mr Vermeer's proposed solution would address the issues he has raised and would contribute to the achievement of the NEO. Mr Vermeer considers that his proposal would remove barriers that support the efficient investment in 5-30 MW generation that is co-located with load and would help these customers achieve a reduction in their electricity costs.

In considering the proposal the Commission will also consider whether the issue identified by Mr Vermeer would be more appropriately resolved outside of the NER. For example, through changes to AEMO's procedures and processes.

Finally, the Commission notes that there are some inconsistencies between Mr Vermeer and the AEC's rule change requests. The AEC's proposed solution involves restricting AEMO's ability to provide exemptions or reclassify generators, while Mr. Vermeer's would see that embedded generators of a particular size could be granted conditional exemptions. The AEC's proposed changes to the NER's classification thresholds may also have implications for how an exemption for embedded generators could be accommodated. If the Commission decides to reduce the classification threshold for new scheduled and semi-scheduled generators from 30 MW to 5 MW in the rules, then AEMO, which sets the registration thresholds in its procedures, would likely adjust its registration and exemption procedure to reflect this change. So, rather than AEMO's procedures stating that it would only provide an exemption from registration for generators above 30 MW in exceptional circumstances, AEMO could

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<sup>103</sup> AEC, *Generator registration thresholds — rule change request*, p. 4.

potentially change this to make it 5 MW instead. While it may seem as though this would be more difficult to accommodate the 'conditional exemption' for embedded generators between 5 and 30 MW, the Commission considers it could still be possible.

To assist with the assessment of this rule change request, the Commission sets out the following stakeholder questions about the solutions proposed by Mr Vermeer.

**QUESTION 11: EXEMPTION SOLUTIONS — MR VERMEER**

1. Do you consider that Mr Vermeer's proposed solution appropriately addresses the connection issues for embedded generators between 5 and 30 MW? Why or why not?
2. Do you agree that there are potential inconsistencies with the solutions proposed by the AEC and Mr Vermeer? If so, do you have any recommendations for how they could both be accommodated?
3. Do you consider that the issue would be more appropriately addressed outside of the NER through changes to AEMO's procedures and processes?

## ABBREVIATIONS

AEC	Australian Energy Council
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulatory
DCLS	Dispatch-capable load station
DNSP	Distribution network service provider
ESB	Energy Security Board
GPS	Generator performance standards
NEL	National Energy Law
NEO	National energy objective
NER	National Electricity Rules
NSP	Network service provider
MTPASA	Medium-term projected assessment of system adequacy
STPASA	Short-term projected assessment of system adequacy