

Australian Energy Market Commission

**Draft Rule Determination**

**National Electricity Amendment (Central  
Dispatch and Integration of Wind and Other  
Intermittent Generation) Rule 2007**

Rule Proponents  
NEMMCO

22 November 2007

Signed: .....

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## **About the AEMC**

The Council of Australian Governments, through its Ministerial Council on energy, established the Australian Energy Market Commission (AEMC) in July 2005 to be the Rule maker for national energy markets. The AEMC is currently responsible for Rules and policy advice covering the National Electricity Market. It is a statutory authority. Our key responsibilities are to consider Rule change proposals, conduct energy market reviews and provide policy advice to the Ministerial Council as requested, or on AEMC initiative.

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## Abbreviations and glossary

AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
AGC	Automatic generation control (AGC): the system into which the loading levels from economic dispatch will be entered for generating units operating on automatic generation control in accordance with Clause 3.8.21(d).
AWEFS	Australian Wind Energy Forecasting System
Central Dispatch	The process managed by NEMMCO for the dispatch of scheduled generating units, scheduled loads, scheduled network services and market ancillary services in accordance with Clause 3.8 of the National Electricity Rules.
Commission	see AEMC
DNSP	Distribution Network Service Provider
ESC	Essential Services Commission (Victoria)
ESCOSA	Essential Services Commission of South Australia
ESIPC	Electricity Supply Industry Planning Council (South Australia)
FCAS	Frequency Control Ancillary Services
Intermittent	A description of a generating unit whose output is not readily predictable, including, without limitation, solar generators, wave turbine generators, wind turbine generators and hydro-generators without any material storage capability.
ISO	Independent Systems Operator
kV	Kilovolt
LNSP	Local Network Service Provider
MAS	Market Ancillary Services
MCE	Ministerial Council on Energy
MNSP	Market Network Service Provider
NECA	National Electricity Code Administrator
NEL	National Electricity Law
NEM	National Electricity Market
NEMDE	National Electricity Market Dispatch Engine is the computer system and algorithms used by NEMMCO to optimise the Central Dispatch process.
NEMMCO	National Electricity Market Management Company
Non-scheduled generating unit	A generating unit whose output is not controlled via the Central Dispatch process, in accordance with Chapter 2 of the Rules..
NSP	Network Service Provider
PASA	Projected Assessment of System Adequacy

Rules	National Electricity Rules
Scheduled generating unit	A generating unit whose output is controlled via the Central Dispatch process, in accordance with Chapter 2 of the Rules.
SCO	Standing Committee of Officials
SOO	Statement of opportunities, which is prepared annually by NEMMCO in accordance with the Clause 3.13.3(q) of the Rules.
TNSP	Transmission Network Service Provider
TPA	Trade Practices Act 1974 (Commonwealth)
TUoS	Transmission User of Service
UIGF	Unconstrained intermittent generation forecast
WEIRG	Wind Energy Industry Reference Group
WEPWG	Wind Energy Policy Working Group
WETAG	Wind Energy Technical Advisor Group

## Summary

The Australian Energy Market Commission (Commission) makes this draft Rule determination and attached draft Rule on NEMMCO's proposal relating to the Central Dispatch and Integration of Wind and Other Intermittent Generation in accordance with section 99 of the National Electricity Law (NEL).

In 2004 the Ministerial Council for Energy's (MCE) Standing Committee of Officials (SCO) formed the Wind Energy Policy Working Group (WEPWG) to review the range of policy issues associated with the connection of large amounts of wind generation. The WEPWG requested NEMMCO to form the Wind Energy Technical Advisory Group (WETAG) to investigate the technical matters from the WEPWG policy review, including how large amounts of intermittent non-scheduled generation could be integrated in the optimised central dispatch process, in part because the operational security limits of the network may be infringed.

In March 2006 WEPWG gave NEMMCO its in-principle support of the proposed Semi-Dispatch arrangements and requested NEMMCO to develop a package of proposed Rule changes. NEMMCO, in consultation with the Wind Energy Industry Reference Group (WEIRG), an industry group established by NEMMCO, developed a package of proposed Rule changes to incorporate intermittent generation, including wind generators, in the Central Dispatch processes.

On 23 April 2007 the Commission received a Rule change proposal regarding the dispatch of significant intermittent generation from NEMMCO entitled "Semi-Dispatch of Significant Intermittent Generation".

NEMMCO's Rule change proposal seeks to integrate significant intermittent generating units (such as windfarms) into the Central Dispatch and projected assessment of system adequacy (PASA) processes in order to enhance system security. Under NEMMCO's proposal the requirements on these generating units would include:

- being registered as under a new classification of "Semi-Scheduled Generator" which is defined for significant intermittent generating units<sup>1</sup>;
- submitting dispatch offers, in a similar manner to scheduled generating units;
- limiting their output at times when that output would otherwise violate secure network limits; and
- including adequate voice and electronic communications and operational data telemetry links to support the receipt of dispatch instructions from NEMMCO

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<sup>1</sup> At present significant intermittent generators are usually classified as Non-Scheduled Generators, except for some newer windfarms in South Australia that are required to be classified as Scheduled Generators under the licenses.

every 5 minutes and to enable NEMMCO to audit dispatch cap compliance (equivalent to the requirements for scheduled generating units).

Network flows would be controlled to within secure limits through the action of constraints in the Central Dispatch process which, in the case of semi-scheduled generating units, may reduce the level of output from intermittent generators when system security would otherwise be violated. This in effect means that significant intermittent generators must then compete with scheduled generation for access to the network during periods of congestion.

The Commission considers that the proposed Rule falls within the subject matters that the AEMC may make Rules about, as it relates to:

- the operation of the national electricity market (as it involves the rules for dispatching intermittent generating systems);
- the operation of the national electricity system for the purposes of the safety, security, and reliability of that system (as this matter involves the ability to maintain system security and reliability in the presence of intermittent generating systems) and;
- the activities of persons (including Registered Participants) participating in the national electricity market or involved in the operation of the national electricity system (as this matter involves the registration and operation of intermittent generators as a new class of Registered Participant).

In addition the Commission is satisfied that the proposed Rule is also within matters set out in Schedule 1 to the NEL as it relates to:

- The registration of persons as Registered participants or otherwise for the purposes of this Law and the Rules, including the deregistration of such persons or suspension of such registrations (Clause 1 of Schedule 1 to the NEL); and
- The operation of generating systems, transmission systems, distribution systems or other facilities (Clause 11 of Schedule 1 to the NEL).

On 10 May 2007 the Commission commenced the consultation on the Draft Rule under section 95 of the NEL. The consultation period closed on 6 July 2007. The Commission received seven submissions and five supplementary submissions. The submissions and supplementary submissions all agreed that there is a need to be able to integrate significant intermittent generators into the NEM Central Dispatch to be able control network flows within secure limits. However, many of the submissions considered that NEMMCO's proposed Rule introduced additional requirements for significant intermittent generators that were too arduous and not necessary to meet the key objective of controlling network flows in order to maintain system security.

The Commission issued two notices under section 107 of the NEL on 23 August 2007 and 4 October 2007 extending the period of time for the preparation of the draft determination for a combined period of 12 weeks. The Commission made these decisions in order to analyse substantive late submissions, to have opportunities to

meet with key stakeholders and to consider the complex nature of the issues raised in submissions.

The Commission understands that NEMMCO has used the existing requirements for Schedule Generators as the starting point when developed the proposed Rule. When reviewing NEMMCO's proposal the Commission has taken the requirements for Non-Scheduled Generators as the starting point and added only those requirements that are necessary for a semi-scheduled generating unit to operate in the market. The Commission considers that this approach will reduce the burden on investors in significant intermittent generators.

The Commission has also taken the view that, while NEMMCO's proposed Rule is in terms of intermittent generators, the Commission has comprehensively assessed the proposal in terms of its applicability to current wind generation technology whilst not attempting to foresee the requirements of all possible future intermittent generation technologies. The Commission considers that it is not possible to assess the proposal all future intermittent generation technologies.

A detailed description of the Commission's analysis of the policy issues raised in NEMMCO's proposed Rule is provided in Chapter 4 of this determination. The key policy decisions adopted by the Commission, and implemented in the Draft Rule, are to:

- include the classification of Semi-Scheduled Generator into the Chapter 2 of the Rules, and allowing a Semi-Scheduled Generator to register a number of physical generating units as a single generating unit at the time of registration;
- Require Semi-Scheduled Generators to participate in the Central Dispatch process, including submitting offers, responding to dispatch instructions and providing information on their availability;
- Allow the control of semi-scheduled generating units using network constraint equations;
- Require NEMMCO to prepare Unconstrained Intermittent Generation Forecast (UIGF) for each semi-scheduled generating unit based on availability information provided by the Semi-Scheduled Generator and weather information (in the case of wind generators);
- Require Semi-Scheduled Generators to limit the generation from their semi-scheduled generating units to below a dispatch cap whenever the generation is limited by the Central Dispatch process;
- Place compliance obligations on the Semi-Scheduled Generators;
- Require NEMMCO to monitor the compliance of Semi-Scheduled Generators; and
- Include grandfathering provisions for intermittent generating units registered at the date the final Rule determination is published, and projects considered committed based on the criteria in the 2007 Statement of Opportunities applied at 1 January 2008.

The Commission considers that, following the removal of some the more arduous and less important requirements contained in NEMMCO's proposal, the Semi-Dispatch arrangements contained in the draft Rule promote the efficient use of, and efficient investment in, electrical services and through the improvement in NEMMCO's ability to integrate significant intermittent generators in the Central Dispatch process. The Commission therefore considers that these improvements are likely to promote the long term interest of consumers of electricity through lower prices for energy, market ancillary service and network charges, and higher levels of reliability and security of the national electricity system.

The Commission notes that the provisions of this Draft Rule will have an affect on the table of Civil Penalty Provisions contained in the National Electricity Regulations. The Commission intends to bring this matter to the attention of the MCE and the AER following the publication of this draft Rule determination.

This draft Rule determination sets out the reasons of the Commission in accordance with the requirements of the NEL and sets out the Commission's assessment in relation to the above proposed changes. The draft Rule, which has been made in accordance with this assessment, is attached.

The Commission invites submissions on this draft Rule determination by 25 January 2008. The Commission notes that the minimum period of consultation on a draft Rule determination is 6 weeks, which is 4 January 2008, but the Commission considers that stakeholders would benefit from an additional three weeks because of the size of the Draft Rule and the complexity of some of the issues, including the grandfathering arrangements and the aggregation of individual units at the time of registration. The Commission is particularly interested in receiving submissions from stakeholders with examples of projects that they believe would be adversely affected by the proposed draft grandfathering provisions. Submissions addressing the grandfathering arrangements should be detailed using specific examples and should clearly articulate why the proponent believes a project should be grandfathered.

Submissions may be sent electronically to [submissions@aemc.gov.au](mailto:submissions@aemc.gov.au) or by mail to:

Australian Energy Market Commission  
PO Box A2449  
Sydney South NSW 1235  
Fax: 02 8296 7899

All submissions should be prepared and lodged in accordance with the Commission's Guidelines for making written submissions on Rule change proposals which is available at the Commission's website at [www.aemc.gov.au](http://www.aemc.gov.au).

In accordance with section 101 of the NEL, any interested person or body may request that the Commission hold a pre-determination hearing in relation to the draft Rule determination. Any request must be made in writing and must be received by the Commission by no later than 29 November 2007.

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# 1 NEMMCO's Rule Proposal

On 23 April 2007, the Commission received a Rule change proposal regarding the dispatch of significant intermittent generation from NEMMCO entitled "Semi-Dispatch of Significant Intermittent Generation".

## 1.1 Overall effect of NEMMCO's Rule change proposal

NEMMCO's Rule change proposal states its proposal seeks to enhance power system security by requiring significant intermittent generators<sup>1</sup> (such as windfarms) to participate in the Central Dispatch and PASA processes, and to limit their output at times when that output would otherwise violate secure network limits. To this end NEMMCO propose that a new registration classification of "Semi-Scheduled Generator" be defined for significant intermittent generators, instead of being limited to registering intermittent generators as either Scheduled or Non-Scheduled. The proposal also includes changes to the existing requirements for Scheduled and Non-Scheduled generation as a result of the review of the Central Dispatch and projected assessment of system adequacy (PASA) processes to integrate intermittent generators.

Under NEMMCO's proposal, significant intermittent generators would be required to submit dispatch offers, in a similar manner to scheduled generating units. These dispatch offers would be optimised in conjunction with the bids and offers from scheduled generating units, Scheduled Network Services and Scheduled Loads. Network flows would be controlled to within secure limits through the action of constraints in the Central Dispatch process which, in the case of semi-scheduled generating units, may reduce the level of output from intermittent generators when system security would otherwise be violated. In doing so significant intermittent generators must then compete with scheduled generators rather than simply being a 'price-taker'<sup>2</sup>.

## 1.2 Description of NEMMCO's proposed Rule

This section provides a summary of NEMMCO's Rule change. Section 3 of NEMMCO's proposal provides further explanation of its proposed Rule.

### 1.2.1 Registration and classification of intermittent generation

Under the current Rules a generating unit is either classified as 'scheduled', where its output is controlled via the Central Dispatch process, or 'non-scheduled' where the unit is a price taker and its output not under the control of the Central Dispatch

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<sup>1</sup> A description of a generating unit whose output is not readily predictable, including, without limitation, solar generators, wave turbine generators, wind turbine generators and hydro-generators without any material storage capability.

<sup>2</sup> A price-taking generator does not attempt to influence the market price by adjusting its offer price or quantity, rather it accepts the price set by the market.

process.<sup>3</sup> Normally generating units that are larger than 30 MW are classified as scheduled, unless granted an exemption by NEMMCO on grounds such as its output being intermittent.

The proposed Rule changes introduce a new generating unit classification of semi-scheduled and an associated participant category of 'Semi-Scheduled Generator'. NEMMCO anticipates that all new significant windfarms would be expected to classify as semi-scheduled.

NEMMCO states that under the proposed arrangements a new generating unit, or an existing generating unit that wished to be reclassified, would be classified as a semi-scheduled generating unit if:

The generating unit had an output nameplate rating  $\geq 30$  MW, or the generating unit is part of a group of generating units connected at a common connection point (a generating system) that has a combined output nameplate rating  $\geq 30$  MW, and the generating unit has an output that is intermittent.

Pre-requisites for a generating unit being classified as a Semi-Scheduled would be to satisfy NEMMCO that:

- There is adequate voice and electronic communications and operational data telemetry links are required to support the receipt of dispatch instructions from NEMMCO every 5 minutes and to enable NEMMCO to audit dispatch cap compliance (equivalent to the requirements for scheduled generating units);
- The generator will be capable of operating their semi-scheduled generating unit in accordance with the co-ordinated central dispatch process operated by NEMMCO under Chapter 3; and
- Each semi-scheduled generating system will be capable of meeting or exceeding the performance standards registered with NEMMCO.

### **1.2.2 Participation in Central Dispatch and PASA**

Under NEMMCO's proposed semi-scheduled arrangements all Semi-Scheduled Generators would be required to participate in Central Dispatch (Dispatch and Pre-Dispatch) and PASA (ST-PASA and MT-PASA).

To participate in Central Dispatch the Semi-Scheduled Generators would be required to:

- submit daily energy market offers (dispatch offers) to NEMMCO for each semi-scheduled generating unit;

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<sup>3</sup> The classification of a generating unit as either scheduled or non-scheduled should not be confused with classification as a market generating unit market generating unit, where the units output is not purchased in its entirety by the Local Retailer or by a local Customer, or as a non-market generating unit, where its output is purchased in its entirety by the Local Retailer or by a local Customer.

- allow the National Electricity Market Dispatch Engine (NEMDE<sup>4</sup>) to determine the dispatch instruction (targets) for each semi-scheduled generating unit, based on optimal dispatch of all scheduled and semi-scheduled generating units in the NEM (as described in clause 3.8.1(b) of the Rules); and
- receive electronic dispatch instructions from Central Dispatch and comply with these dispatch instructions as required.

To participate in ST-PASA and MT-PASA the Semi-Scheduled Generators would be required to submit valid inputs including their availability.

Requiring Semi-Scheduled Generators to participate in Central Dispatch and PASA will:

- Allow optimal central dispatch of both scheduled and intermittent generating units; and
- Provides a market based and transparent arrangement for the access to the network.

### **1.2.3 Control of intermittent generation through network constraints**

Transmission network flows are controlled by the use of constraint equations in NEMDE. At present Scheduled Generators, plus scheduled network services and scheduled loads, appear in constraint equations as controllable variables<sup>5</sup>. NEMDE determines the optimal dispatch<sup>6</sup> through the action of the constraint equation in combination with the offers and bids from the Scheduled Generators, network services and loads.

The constraint equations represent the limits on the network transfers necessary to maintain system security. A constraint equation is said to “bind” when the corresponding secure network transfer limit is reached and it becomes necessary for NEMDE to adjust the dispatch of the scheduled generating units in order to maintain system security. A constraint equation is said to “violate” when NEMDE is unable to find a level of dispatch for the schedule generators that is able to limit the network transfers within its secure transfer limit.

Under NEMMCO’s proposal significant intermittent scheduled generations would be required to participate in the dispatch process and hence their output may be adjusted in order to control network flows by their inclusion as controllable variables in NEMDE constraint equations.

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<sup>4</sup> NEMDE is the computer system and algorithms used by NEMMCO to optimise the Central Dispatch process..

<sup>5</sup> Often referred to as left hand side (LHS) or dependent variables.

<sup>6</sup> Optimal in the sense of maximising the value of maximise the value of spot market trading, in accordance with Clause 3.8.1(b) of the Rules.

#### **1.2.4 Unconstrained intermittent generation forecasts (UIGF)**

NEMMCO's proposed Semi-Dispatch arrangements rely on the provision of "unconstrained intermittent generation forecasts" (UIGF) for each semi-scheduled generating unit, and for all dispatch intervals in the Dispatch, Pre-Dispatch and the PASA processes.

The UIGF would be the equivalent forecast of electrical power output from a generating unit, or aggregated unit, based on the forecast amount of energy available for conversion into electrical power. The generation forecast is unconstrained in the sense that it ignores external factors that may limit the generating unit's output such as a network limit or an economic requirement to operate at a reduced output.

NEMMCO proposes that the UIGF used in the Dispatch and Pre-Dispatch processes would represent the most probable forecast of the generation from the semi-scheduled generating units. In the case of the PASA processes NEMMCO proposes to input the more conservative forecasts in addition to most probable forecasts from the UIGFs in a similar manner to the demand forecasts that are currently input into these processes.

NEMMCO also propose that the UIGF would be used in the Dispatch, Pre-Dispatch and the PASA processes as an upper limit on the dispatch cap to be calculated by NEMDE for a semi-scheduled generating unit, which is analogous to the availability of a scheduled generating unit, being the maximum value to which it can be dispatched by NEMDE.

NEMMCO considers that the use of the UIGF would provide a more accurate forecast of the electrical output of significant intermittent generation and hence will lead to more efficient dispatch and pricing outcomes, more accurate PASA assessments and improved power system security and reliability. NEMMCO also considers that, as part of the arrangements for integrating semi-scheduled generating units, the UIGF is also necessary when NEMDE determines whether or not the relevant Semi-Dispatch unit will be subject to a dispatch cap for that dispatch interval.

#### **1.2.5 Conditions for Semi-Dispatch compliance**

Under the Semi-Dispatch arrangements proposed by NEMMCO a semi-scheduled generating unit would only need to comply with its dispatch calculated by NEMDE when its "Semi-Dispatch compliance" requirement flag is set. This would either occur when the generating unit's output is:

- Explicitly limited by any binding or violating network constraint equation such that if the output were to exceed the cap this would result in violating that network constraint equation; or
- Below its UIGF as a result of an offer or a market related limitation including unit ramp rate, unit fixed loading level, non-dispatch of uneconomic price bands or marginal dispatch of economic price bands.

Under NEMMCO's proposal when, for a particular semi-scheduled generating unit and dispatch interval:

- Either of these conditions above are met the dispatch interval is defined as a "semi-dispatch interval" and the "Semi-Dispatch compliance" requirement flag is set; while
- Neither of these conditions above are met the dispatch interval is defined as a "non-semi-dispatch interval" and the "Semi-Dispatch compliance" requirement flag is reset.

In assessing Semi-Dispatch compliance NEMMCO proposes the assumption that:

- The UIGF, the dispatch cap and the constraint equation solutions would all come from the same dispatch interval;
- There is no restriction on the type of network constraint that could set the "Semi-Dispatch compliance" requirement flag;
- Only network constraint equations that control the output of the semi-scheduled generating unit are considered, and if the constraint equation binds or violates, then the semi-scheduled generating unit would be given a dispatch cap less than or equal to its UIGF; and
- If the binding or violating constraint equation only controls interconnector flows, then one or more semi-scheduled generating units may be constrained off due to unit ramp rate, unit fixed loading level, non-dispatch of uneconomic price bands or marginal dispatch of economic price bands.

NEMMCO considers that the use of "Semi-Dispatch compliance" requirement flags would allow "semi-dispatch intervals" to be defined where semi-scheduled generating units are required to control their output below their dispatch caps.

### **1.2.6 Requirements for dispatch cap compliance**

Under NEMMCO's proposed arrangements each semi-scheduled generating unit would be electronically and confidentially issued with both a dispatch cap and an associated 'Semi-Dispatch compliance' requirement flag.

NEMMCO proposes that each semi-scheduled generating unit would be required to limit its output below its dispatch cap during 'semi-dispatch intervals' when the 'Semi-Dispatch compliance' requirement flag is set. Compliance with the dispatch cap would be assessed at the end of the dispatch interval, although NEMMCO notes that the Semi-Scheduled Generator would be encouraged to linearly ramp its output during a 'semi-dispatch interval' under the causer pays provisions in Clause 3.15.6A(k) in order to minimise the use of market ancillary services.

NEMMCO also proposes that a semi-scheduled generating unit would not be required to comply with its dispatch cap during 'non-semi-dispatch intervals' when the 'Semi-Dispatch compliance' requirement flag is reset, making the

semi-scheduled generating unit free to operate at any output level during the dispatch interval.

Under NEMMCO's proposed arrangements the market ancillary services causer pays factors for semi-scheduled generating units would be such that:

- During a "semi-dispatch interval" the linear trajectory that would apply in the causer pays calculations would be based on a linear ramp between successive dispatch targets, in a similar manner to the causer pays factors for scheduled generating units; and
- During a "non-semi-dispatch interval" the linear trajectory that would apply in the causer pays calculations would be based on a calculated line of best fit through the actual generation during the dispatch interval.

NEMMCO considers that these arrangements would be effective because a semi-scheduled generating unit would be required to control its output below its dispatch cap in order to avoid violating (or further violating) a network constraint, but would be able to ignore its dispatch cap at other times. NEMMCO also considers that semi-scheduled generating units controlling its output to or below its dispatch cap would allow for lower operating margins than would otherwise be required in order to accommodate potentially large uncontrolled increases in the output of the semi-scheduled generating unit.

### **1.2.7 Monitoring of dispatch cap conformance by NEMMCO**

NEMMCO proposes that it would continuously monitor the conformance of semi-scheduled generating units in a similar manner to the way it monitors the conformance of scheduled generating units under Clause 3.8.23(a).

NEMMCO's proposal indicates that further information on how it intends to change its dispatch conformance monitoring procedures to accommodate semi-dispatch generating units is contained in a NEMMCO information paper available on its website<sup>7</sup>.

### **1.2.8 Transition into the Semi-Dispatch arrangements**

Under NEMMCO's proposal a complete, unconditional and ongoing exemption from any requirement associated with the proposed Rules for Semi-Scheduled Generators would be granted to all generators that own or operate generating units that either:

1. Are already registered in the NEM prior to the proposed Rules taking effect; or
2. Submit an application to register in the NEM on or after the proposed Rules taking effect but have executed a network connection agreement with the relevant NSP before the proposed Rules take effect.

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<sup>7</sup> "Semi-Dispatch of Significant Intermittent Generation - Proposed Market Arrangements", 4<sup>th</sup> May 2007, available at <http://www.nemmco.com.au/dispatchandpricing/140-0091.pdf>.

NEMMCO considers that this approach protects the owners of significant intermittent generating units from otherwise having unanticipated expenses to upgrade these units in order to be able to operate as semi-scheduled generating units. NEMMCO also considers that the use of an executed connection agreement is an appropriate milestone for progress to be used as defining that the proponent has made a significant investment in the project and committed to technical performance. NEMMCO considers that the technology required to enable remote dispatch of intermittent generators is already available and, under the new Technical Standards Rules<sup>8</sup>, all non-scheduled generating units with a combined nameplate rating above 30 MW require active power control<sup>9</sup> and remote monitoring<sup>10</sup> which can be upgraded to electronically receive dispatch instructions.

Also under NEMMCO's Rule change proposal Semi-Scheduled Generators would be treated in the same manner as Scheduled Generators for the purposes of allocating participant fees. Also, to encourage existing intermittent generators to apply to be reclassified as semi-scheduled, NEMMCO proposes that the participant fees be waived for up to two years for those generators that reclassify their generating units as semi-scheduled.

NEMMCO considers that where Jurisdictional licensing arrangements, special dispatch control arrangements within connection arrangements or other interim arrangements exist, these arrangements may potentially conflict with the proposed arrangements for semi-scheduled generating units. NEMMCO considers, therefore, that some of these interim arrangements may need to be wound up or amended to enable the transition to the Semi-Dispatch Rules.

### **1.3 How NEMMCO considers that its proposal meets the NEM Objective**

Section 6 of NEMMCO's proposal contains an explanation of how it considers that the proposed Rule would or would be likely to contribute to the achievement of the NEM objective. The revised proposal does not explicitly explain its benefits in terms of the NEM objective for the purposes of the requirements in the Regulations, however further analysis of the proposal shows that conclusions can be drawn to establish that an explanation of how the proposal meets the NEM objective has been provided. Furthermore, an analysis of the substance in the proposal clearly demonstrates the potential of the proposal to meet the NEM objective.

NEMMCO identifies the implications of maintaining the status quo in the presence of increased penetration of intermittent generation as:

- increased risks of not maintaining system security due to the uncertain impact of intermittent generation on network capability;

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<sup>8</sup> National Electricity Amendment (Technical Standards for Wind Generation and other Generator Connections) Rule 2007 No. 2, made and commenced operation on 15 March 2007.

<sup>9</sup> Under schedule 5.2.5.14 of the Rules.

<sup>10</sup> Under schedule 5.2.6.1 of the Rules.

- reduced efficiency of the Central Dispatch process due to large safety margins in network constraint equations;
- increased incidences of Scheduled Generators or interconnector transfers being constrained off, with associated higher operating costs, to avoid network overload in the presence of intermittent generators; and
- increased use of directions and instructions by NEMMCO under Clause 4.8.9, “Power to issue directions and Clause 4.8.9 instructions”, to Non-Scheduled Generators to address potential system security violations.

NEMMCO considers that the proposal addresses these issues and summarises the benefits of the proposed Rule that are associated with the NEM objective as:

- reducing the risk of operating in an insecure state;
- reducing the risk associated with investment in intermittent generation that is currently subject to NEMMCO directions and instruction under Clause 4.8.9;
- more efficient investment in and use of network services due to reducing the constraint equation operating safety margins;
- more effective inter-regional hedging due to the increased firmness of interconnector capability;
- improved generator investment signals due to better representation of congestion in the power system network; and
- more efficient investment generally due to greater confidence in the market outcomes due to the reduction in the number of approaches taken to manage intermittent generation and reduced reliance on market intervention.

NEMMCO considers that the compliance costs imposed on intermittent generators and itself would be relatively small and are more than outweighed by the benefits identified above. For these reasons, NEMMCO consider that the Rule proposal has the potential to satisfy the Rule making test.

## 2 Background to the proposal

### 2.1 Historical context for the proposed Rule

The connection of significant amounts of non-scheduled wind generation in the NEM has resulted in a concern that there may be an adverse impact on NEMMCO's ability to manage network flows within secure limits.

In 2004, the Ministerial Council on Energy's (MCE) Standing Committee of Officials (SCO) formed the Wind Energy Policy Working Group (WEPWG) to review the range of policy issues associated with the connection of large amounts of wind generation. The WEPWG review recommended a number of initiatives including the introduction of market based arrangements for the management of significant amounts of intermittent generation, such as wind generation, within network limits.

WEPWG requested NEMMCO to form the Wind Energy Technical Advisor Group (WETAG) to investigate the technical matters from the WEPWG policy review. WETAG identified a number of issues including that large amounts of intermittent non-scheduled generation are incompatible with the optimised central dispatch process in the NEM, in part because the operational security limits of the network may be infringed. In its report WETAG<sup>11</sup> considered that it is:

“...inevitable that significant non-scheduled generation plant will need to be controlled to reduced outputs in cases where network loading constraints become binding. There is merit in determining the acceptable loading level limits of non-scheduled generating plant using the central dispatch engine, particularly for any plant that is greater than 30 MW in size.”

The WETAG report proposed the “Semi-Dispatch” model whereby wind generators would be incorporated into the Central Dispatch process using network constraint equations to control network flows within secure limits. Under the Semi-Dispatch model NEMMCO's dispatch algorithm NEMDE would issue the wind generators dispatch instructions to limit their output when the relevant network constraints are binding. WETAG noted that the windfarm owners would need to install appropriate communications and control facilities to ensure that the dispatch instructions could be followed.

In August 2005 the SCO requested NEMMCO to develop a more detailed description of the Semi-Dispatch arrangements. To this end its Wind Energy Industry Reference Group (WEIRG) assisted NEMMCO develop proposed Semi-Dispatch arrangements. In December 2005 NEMMCO and the WEIRG completed an initial investigation and confirmed to WEPWG Semi-Dispatch arrangements were technically feasible. In March 2006 WEPWG gave NEMMCO its in-principle support of the proposed Semi-Dispatch arrangements and requested NEMMCO to develop a package of proposed Rule changes. NEMMCO, in consultation with the WEIRG, developed a package of

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<sup>11</sup> Integrating windfarms into the NEM”, WETAG report to WEPWG, 12 January 2005, <http://www.mce.gov.au/assets/documents/mceinternet/WEPWGDisscussionPaperMar0520050510160534.pdf>

proposed Rule changes to incorporate intermittent generation, including wind generators, in the Central Dispatch processes.

On 23 April 2007 the Commission received a Rule change proposal regarding the dispatch of significant intermittent generation from NEMMCO "Semi-Dispatch of Significant Intermittent Generation".

## **2.2 Risks of increased connection of wind generation**

The amount of intermittent generation, predominantly in the form of wind generation, has grown rapidly in recent years in the NEM and this trend is expected to continue. This growth has been particularly pronounced in South Australia.

To date the intermittent generators have been able to register with NEMMCO as non-scheduled<sup>12</sup> and hence their output is not controlled by Central Dispatch. Intermittent generators are classified as non-scheduled because their output cannot be fully controlled as it is derived from an irregular and uncontrollable fuel source. A number of network control and market efficiency issues are emerging for the NEM as the output of the non-scheduled generators is not centrally controlled, effectively giving the intermittent generators firm network access in preference to scheduled generators, unless directed by NEMMCO or its agents.

Allowing intermittent generators, including relatively large windfarms, is likely to lead to increased risks in the future including:

### **Increased risk of violating a secure network limit**

The output of a non-scheduled generator may significantly increase the flows in the network which may cause flows to go beyond a secure limit, thus causing the power system to be in an insecure state. Such a violation of a secure network limit could not be alleviated by the NEMDE as it does not have control over non-scheduled generators.

### **Reduced market efficiency due to higher operating margins**

The network constrained equations used in NEMDE to control network flows to be within secure transfer limits include a safety margin to account for measurement errors and other uncertainties due to inaccuracies of forecast demands on network flows. These safety margins need to be sufficiently large to allow for the errors and uncertainties but the presence of a safety margin does reduce the network transfers associated when the associated constraint equation is binding.

A reduction in the transfer capability through an increase in the operating margin means that at the times when the constraint is binding a higher cost generator must

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<sup>12</sup> The South Australian Jurisdiction has recently require all new wind generators in its state to be registered with NEMMCO as scheduled. This is an interim measure that is likely to be revoked if this Rule change package is accepted.

operate at an otherwise increased output, with an equivalent reduction in the output of a low cost generator, thus increasing the cost of dispatching generation to meet the load.

The presence of large non-scheduled intermittent generation is likely to increase the uncertainty in the network flows, thus increasing the operating margins, reducing the transfer allowable capability and costs of dispatching sufficient generation to meet demand. Where the affected network is an interconnector the reduction in network transfer capability may reduce the firmness of the hedges funded by the associated inter-regional settlements residues.

### **Reduced market efficiency due to increased market interventions**

Where the transfer in the network is above a secure operating limit, and this transfer cannot be reduced by the actions of NEMDE, such as where the generators associated with the transfer are non-scheduled, then NEMMCO would need to rely on directions or instructions to control the output from these non-scheduled generators to return the transfer in the network to below a secure operating limit.

Controlling network flows through market interventions such as NEMMCO directions and instructions is less efficient than controlling the flows using explicit constraint equations in NEMDE. This is because:

- the costs of market interventions are not as rigorously costed when compared to the Central Dispatch process; and
- the network flows are controlled more precisely by the Central Dispatch process.

Consequently, the use of NEMMCO intervention to control network flows creates additional uncertainty for participants compared to controlling network flows using NEMDE and constraint equations.

### **Interim measures**

The South Australian Jurisdiction has been concerned about large amount of wind generators connecting to networks in that State and the potential impacts on those networks. To date there has been an absence of NEM arrangements for the management of significant amounts of these intermittent non-scheduled generators, such as the “Semi-Dispatch” model proposed by NEMMCO, and in September 2005 the Essential Services Commission of South Australia (ESCOSA)<sup>13</sup> implemented its own arrangements for managing the network security issues associated with windfarms including:

- local dispatch control schemes operated by the associated NSP; and

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<sup>13</sup> Wind Generation Licensing - Statement of Principles”, ESCOSA website, <http://www.escosa.sa.gov.au/webdata/resources/files/050930-R-WindGenerationStatementofPrinciples.pdf>

- requiring new windfarms to be classified as scheduled generators under their licensing conditions.

While these actions appear to be prudent for managing network flows in the absence of the proposed “Semi-Dispatch” model they are likely to lead to less efficient outcome as:

- localised control schemes which tend to be coarse and do not attempt to optimise the dispatch of generation while controlling the network flows; and
- requiring new windfarms to be classified as scheduled generators will impose significant unnecessary costs.

ESCOSA has indicated that:

“until appropriate arrangements (such as formalised Semi-Dispatch rules) are made in the NEM, it is appropriate to require wind generators to operate as scheduled generators under the NER [Rules].”

### **3 Draft Rule Determination**

The Commission has determined in accordance with section 99 of the National Electricity Law (“NEL”) to make the draft Rule.

This determination sets out the Commission’s reasons for making the draft Rule. The Commission has taken into account:

- the Commission’s powers under the NEL to make the Rule;
- the proponent’s Rule change proposal and proposed Rule;
- submissions received;
- relevant Ministerial Council of Energy (“MCE”) statements of policy principles; and
- the Commission’s analysis as to the way(s) in which the draft Rule will or is likely to contribute to the achievement of the national electricity market objective so that it satisfies the statutory Rule making test.

#### **3.1 The Commission’s power to make the Rule**

The subject matters about which the AEMC may make Rules are set out in section 34 of the NEL and more specifically in Schedule 1 to the NEL.

The proposed Rule falls within the subject matters that the AEMC may make Rules about, as it relates to:

- The operation of the national electricity market (as it involves the rules for dispatching intermittent generating systems);
- The operation of the national electricity system for the purposes of the safety, security, and reliability of that system (as this matter involves the ability to maintain system security and reliability in the presence of intermittent generating systems) and;
- The activities of persons (including registered participants) participating in the national electricity market or involved in the operation of the national electricity system (as this matter involves the registration and operation of intermittent generators as a new class of Registered Participant).

The Commission is satisfied that the proposed Rule is a matter about which the Commission may make a Rule.

Specifically, the Rule is also within matters set out in Schedule 1 to the NEL as it relates to:

- The registration of persons as Registered participants or otherwise for the purposes of this Law and the Rules, including the deregistration of such persons or suspension of such registrations (Clause 1 of Schedule 1 to the NEL); and

- The operation of generating systems, transmission systems, distribution systems or other facilities (Clause 11 of Schedule 1 to the NEL).

### **3.2 Relevant MCE statements of policy principles**

The NEL requires the Commission to have regard to any MCE statements of policy principles in applying the Rule making test. The Commission notes that currently there are no MCE statements of policy principles that currently relate to the registration and dispatch process contained in the Rules.

### **3.3 Assessment of the draft Rule: the Rule making test and the national electricity market objective**

The NEM objective is the basis of assessment under the Rule making test and is set out in section 7 of the NEL:

“The national electricity market objective is to promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity and the reliability, safety and security of the national electricity system.”<sup>14</sup>

The Rule making test states:

- (1) the Commission may only make a Rule if it satisfied that the Rule will or is likely to contribute to the achievement of the NEM objective;
- (2) for the purposes of subsection (1), the Commission may give such weight to any aspect of the national electricity market objective as it considers appropriate in all circumstances having regard to any relevant MCE statement of policy principles.<sup>15</sup>

In Section 4 of this determination, the Commission considered the likely advantages and disadvantages of NEMMCO’s proposal in contributing to the economically efficient operation and performance of the NEM. As a result of this analysis, and the issues raised in submissions, the Commission made a number of amendments to NEMMCO’s proposal that are reflected in the Commission’s draft Rule. This section presents the Commission’s assessment of the extent to which the draft Rule promotes the NEM objective and satisfies the Rule making test.

NEMMCO’s Rule proposal seeks to ensure that significant intermittent generating units are integrated into the NEM central dispatch processes in order that NEMMCO can more effectively control network flows within secure operating limits. NEMMCO states in Section 6 of its proposal that its proposed Semi-Dispatch

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<sup>14</sup> National Electricity Law, Section 7..

<sup>15</sup> National Electricity Law, Section 88.

arrangements contribute to the NEM objective, as presented in Section 1.3 of this draft Rule determination.

The Commission considers that integrating significant intermittent generating units<sup>16</sup> into the NEM central dispatch processes would provide a number of improvements to the operation of the NEM when compared to the present arrangement where such generators are registered as non-scheduled generating units, except in a few cases in South Australia. These benefits relate to the improved efficiency of the dispatch process and the improved certainty to investors in NEM. The Commission considers that the main impacts of this draft Rule are:

- greater certainty for the arrangements for the registration and operation of significant intermittent generation projects as a result of defining the semi-scheduled generating unit classification;
- an increase in NEMMCO's ability to manage the impacts from significant intermittent generating units, which represent a growing proportion of the generation in the NEM;
- improving NEMMCO's ability to maintain system security by incorporating the impact of significant intermittent generating units into network constraint equations;
- more accurate forecasts of the output of significant intermittent generating units would allow NEMMCO to reduce the operating margins on its network constraint equations which increases the transfer limits for the transmission network;
- allow the NEM dispatch process to jointly optimise the output from both scheduled and semi-scheduled generating units, particularly when these are subject to a joint network constraint, thus allowing all significant generating units to compete for access to the transmission network on the basis of their dispatch offers;
- reducing the number of occasions where network congestion reduces the transfer capability of interconnectors due to the generation from significant intermittent generating units;
- improving the effectiveness of inter-regional hedging using inter-regional settlements residues due to the increased firmness of interconnector capability;
- reducing the need for NEMMCO to rely on directions under Clause 4.8.9 to manage system security as the generation from significant intermittent generating units would be controlled (at least to the extent that the generation can be reduced) directly by network constraint equations; and

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<sup>16</sup> That is, generating units with a output nameplate rating greater than 30 MW, or the generating unit is part of a group of generating units connected at a common connection point (a generating system) that has a combined output nameplate rating greater than 30 MW.

- reducing the need for network service providers to require the provision of local control and protection schemes to manage network overloads due to the presence of significant intermittent generating units, as such overloads could be managed through the dispatch systems using network constraints.

The Commission also considers that using the “unconstrained intermittent generation forecasts” (UIGF) for each semi-scheduled generating unit in the dispatch process will specifically:

- enable the effective operation of the Semi-Dispatch arrangements; and
- improve the quality of the dispatch process as it would better estimate the generation from intermittent generating units and hence the level of generation to be supplied from scheduled generating units.

### **Efficient use of electricity services**

The Commission considers that the proposed draft Rule will improve the use of existing Scheduled Generators and future Scheduled and Semi-Scheduled Generators units by including all significant generating units in the NEM central dispatch process. This is likely to be reflected in lower dispatching costs which would be expected in the long-term to be passed onto consumers of electricity through lower energy prices.

The Commission considers that reducing the operating margins on network constraint equations will increase the transfer capability of the network which will further promote trade both within regions and between regions. This increase in trade will also operate to reduce the dispatch costs in the NEM and will tend in the long-term to lower energy prices to consumers of electricity.

The Commission considers that the increased network capability associated with reduced operating margins on network constraint equations will generally increase the network capability during times of generation supply shortfall. This will, all other things being equal, generally improve the reliability of supply to consumers of electricity and improve NEMMCO’s ability to maintain system security for given level of demand from consumers of electricity.

The Commission considers that integrating significant intermittent generating units into the dispatch process is likely to reduce the quantity of regulation market ancillary services required to control the power system frequency. This reduction would be possible as the variation of the generation from significant intermittent generating units from one dispatch interval to the next would be captured, to some degree, in the UIGF. The Commission considers that requiring less ancillary services is likely to lead to lower prices to consumers of electricity in the long-term.

### **Efficient investment in electricity services**

The Commission considers the reduced operating margins on network constraint equations will increase available power transfer capability of the network and hence provide better utilisation of existing network assets. This increased utilisation of the

existing network assets could delay the need for future network augmentations which may reduce the network usage charges passed on to consumers of electricity, in the long-term.

The Commission considers that defining a specific set of registration and operating requirements for significant intermittent generation projects will increase certainty, when compared to the current arrangements, for the investors in these projects. Under the current arrangements a significant intermittent generating unit is likely to be registered as a non-scheduled generating unit with the possibility that NEMMCO may modify their registration requirements in accordance with Clause 2.2.3(c). This uncertainty may have deterred some investment decisions which may lead to higher energy prices to consumers of electricity in the long-term.

The Commission also considers that the recent significant intermittent generating units in South Australia are likely to have had significant higher compliance and operating costs are a result of being required to be registered as scheduled generating units. Therefore, allowing these and future significant intermittent generating units to register as semi-scheduled generating units will tend to reduce these compliance and operating costs which in the long-term, lead to reduced energy prices to consumers of electricity.

Under the draft Rule scheduled generating units would be able to compete with significant intermittent generating units for access to the network during times of congestion on the basis of their dispatch offers. The Commission considers that allowing equivalent access to the network for both classifications of significant generators would remove a possible barrier to new Scheduled Generators. This could potentially reduce the dispatch costs in the NEM which is likely to reduce the energy prices to consumers of electricity.

### **Costs to significant intermittent generators**

While the Commission considers that the draft Rule is likely to contribute to the long-term benefits of consumers of electricity through improved reliability and security and lower energy prices, it is also mindful that it places additional costs on a significant intermittent generator compared to the costs of being classified as a Non-Scheduled Generator. These costs include:

- additional systems to submit dispatch offers and receive dispatch instructions from the NEMMCO systems;
- possible additional staff to respond in the event that dispatch instructions are not being followed; and
- lost revenue during periods where its generation is capped due to network constraints.

As discussed in Chapter 4 of this draft Rule determination, the Commission has reduced the obligations on Semi-Scheduled Generators with the aim of reducing the cost of setting up the necessary facilities and the ongoing compliance costs.

The Commission does also, however, note that the costs to some significant intermittent generators may also be reduced through the operation of this draft Rule. In particular, windfarms that have been recently constructed in South Australia have been required to be classified as scheduled generating units and in the future these units may be able to be re-classified as semi-scheduled generating units, with reduced compliance costs.

The Commission considers that these increased costs to significant intermittent generators, while minimised, would impact on the cost of a semi-scheduled generator and would be likely to be increase the energy prices to consumers of electricity in the long-term.

### **Advancement of the NEM objective**

The Commission considers that, following the removal of some the more arduous and less important requirements contained in NEMMCO's proposal, the Semi-Dispatch arrangements contained in the draft Rule promote the efficient use of, and efficient investment in, electrical services and through the improvement in NEMMCO's ability to integrate significant intermittent generators in the Central Dispatch process. The Commission therefore considers that these improvements are likely to promote the long term interest of consumers of electricity through lower prices for energy, market ancillary service and network charges, and higher levels of reliability and security of the national electricity system.

### **3.4 Consultation on the Rule proposal**

On 10 May 2007 the Commission commenced consultation under section 95 of the NEL on the proposal. Consultation closed on 6 July 2007. The Commission received submissions to the proposal from the following parties:

- Auswind;
- Electricity Supply Industry Planning Council;
- Flinders Power;
- Pacific Hydro;
- Roaring 40s;
- TrustPower; and
- Vestas.

The Commission also received supplementary submissions to the proposal from the following parties supplementary submissions:

- NEMMCO on 1 August 2007 and 3 October 2007;
- Pacific Hydro on 14 August 2007;

- Flinders Power on 25 September 2007; and
- Clean Energy Council (previously Auswind<sup>17</sup>) on 28 September 2007

The submissions and supplementary submissions all agreed that there is need for NEMMCO to be able to limit the output of significant intermittent generating units to manage network flows and hence supported the concept of Semi-Dispatch. However all submitters except for ESIPC (and NEMMCO) considered that the Rule change was unnecessarily onerous and could be significantly simplified while still achieving the aim of introducing Semi-Dispatch. The Clean Energy Council (as Auswind) and Vestas made detailed submissions addressing the proposed Rule changes.

The Commission two notices under section 107 of the NEL on 23 August 2007 and 4 October 2007 extending the period of time for the preparation of the draft Rule determination for the proposed National Electricity Amendment (Central Dispatch and Integration of Wind and Other Intermittent Generation) Rule 2007 by six weeks to 11 October 2007 and by a further six weeks to 22 November 2007 respectively. The Commission made these decisions in order to analyse substantive late submissions, to have opportunities to meet with key stakeholders and to consider the complex nature of the issues raised in submissions which included:

- Grandfathering of existing arrangements for existing intermittent generators,
- The treatment of aggregated intermittent generating units;
- The extent to which intermittent generators should participate in PASA and be required to re-bid;
- The need for semi-scheduled generators to operate a manned control room 24 hours a day; and
- The arrangements of intermittent generating units that are connected to a distribution network.

### **3.5 Civil penalty provisions affect by this draft Rule**

The Commission notes that the amendments proposed by the draft Rule may require the MCE to review its classification of clauses as civil penalty provisions. The following clauses of the draft Rule are currently classified as civil penalty provisions under the National Electricity Regulations:

- Non-Scheduled Generator - Clause 2.2.3(d)
- Semi-Scheduled Generator - Clause 2.2.7(e)
- Medium term PASA Clause 3.7.2(d) - (e)

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<sup>17</sup> Since its submission in July, Auswind has merged with the Business Council of Sustainable Energy to form the Clean Energy Council.

- Short term PASA - Clause 3.7.3(e)
- Participation in central dispatch - Clause 3.8.2(a)
- Self-commitment - Clause 3.8.17(e)
- Self-decommitment - Clause 3.8.18(c)
- Rebidding - Clause 3.8.22(c)
- Systems and procedures - Clause 3.13.2(h)
- Standing data - Clause 3.13.3(b)- (c)
- Operational frequency control requirements - Clause 4.4.2(b)
- Determination of latest time for intervention by direction or dispatch of reserve contract - Clause 4.8.5A(d)
- Dispatch instructions for Scheduled Generators - Clause 4.9.2(c)
- Dispatch instructions for Scheduled Network Service Providers - Clause 4.9.2A(c)
- Instructions to Registered Participants - Clause 4.9.3(d)
- Dispatch related limitations on Scheduled Generators - Clause 4.9.4(a) and (c)
- Dispatch related limitations on Scheduled Generators - Clause 4.9.4(d)
- Remote control and monitoring devices - Clause 4.11.1(a)
- Unconstrained intermittent generation forecast – Clause 3.7B (new)

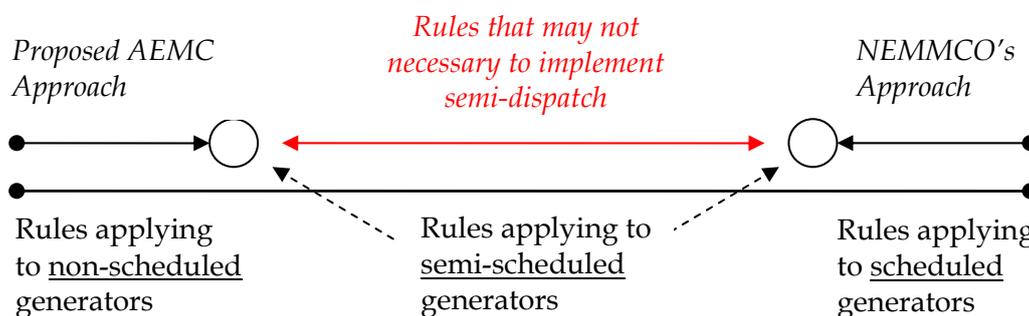
### **3.6 Split commencement date of the draft Rule**

As discussed in Section 4.8 of this draft Rule determination in relation to grandfathering, the Commission has proposed a split commencement date for the draft Rule. The purpose of this split commencement is to ensure only those generating units that meet the requirements in the draft Rule are grandfathered. As a result of the delay in time between the making of the final Rule determination (and the final Rule) and the time NEMMCO's systems will be ready to accommodate central dispatch, the Commission considers that those units who should be registered as semi-scheduled (that is, do not meet the grandfathering requirements) should be registered as such rather than using the delay in time to register as non-scheduled generating units. Schedule 1 of the draft Rule will commence operation on the day the final Rule determination is made (or as soon as practicable after that date). The provisions in Schedule 1 all relate to registration. Schedule 2 of the draft Rule will commence operation on 1 January 2009 or a similar date that takes into account NEMMCO's requirements in implementing semi-scheduled generation into central dispatch.

## 4 Commission's consideration of matters raised in analysis and consultation

In developing the proposed Rule which is aimed at implementing Semi-Dispatch, the Commission understands that NEMMCO has reviewed the Rules and identified the provisions that currently apply to Scheduled Generators as a starting point. NEMMCO has then only excluded those aspects of the Rules that NEMMCO considers cannot be met by intermittent generators (Semi-Scheduled Generators). Based on this analysis, the differences between the operation of Scheduled Generators and Semi-Scheduled Generators in the NEM have not been accounted for with the result being a more onerous set of Rules applying to Semi-Scheduled Generators than is necessary to implement Semi-Dispatch.

The Commission's guiding principle in developing the draft Rule to implement Semi-Dispatch has been that the starting point of the analysis is an identification of the provisions that currently apply to Non-Scheduled Generators and including only new provisions (in most case provisions that currently apply to Scheduled Generators under the Rules) necessary for Semi-Scheduled Generators to participate in the market. As illustrated below, this approach has resulted in the Commission not accepting aspects of NEMMCO's proposed Rule, thus reducing the regulatory burden on the proponents and operators of intermittent generators such as windfarms.



In its Rule change proposal, NEMMCO justified incorporating the concept of Semi-Dispatch into the Rules against the Market Objective.<sup>18</sup> However the Commission considers that NEMMCO did not demonstrate a need to align the obligations on Semi-Scheduled Generators as close as possible to Scheduled Generators, and hence, NEMMCO did not fully justify many of the Rule changes it proposed. The Commission considers its approach to applying the current central dispatch rules to Semi-Scheduled Generators as an efficient and effective method of implementing Semi-Dispatch.

The Commission acknowledges that aspects of the proposed Rule that the Commission considered to be unnecessary implement Semi-Dispatch would in practice have little if any impact on intermittent generators. However, the

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<sup>18</sup> See Section 3.3

Commission does not consider this is a reason to introduce a new provision into the Rules. To introduce a new provision, the Commission must be convinced that a new Rule would make a positive contribution to the NEM Objective. Introducing unnecessary provisions creates confusion and complication for NEM participants, and creates a risk that the Rule could be mis-interpreted in the future.

**As such, the Commission has adopted the view that the national electricity market objective is best served by making the least changes to the Rules necessary to implement Semi-Dispatch as this will ensure the most efficient application of the Rules for Semi-Scheduled Generators. On this basis, the Commission has only accepted those individual Rule changes that it believes are necessary to implement Semi-Dispatch. The Commission's analysis of the likely impact of the draft Rule on the NEM objective is discussed in Chapter 3.**

The Commission believes this will significantly simplify the Rules applying to intermittent generators, which will lead to better understanding of the Rules by investors new to the NEM and reduced regulatory and compliance costs for Semi-Scheduled Generators.

To date the only large intermittent generators have been windfarms. The Commission understands that NEMMCO's proposal sought to apply the proposed Rule to all potential intermittent generation technologies. Whilst it supports this approach, the Commission considers that in practice this may have resulted in the introduction of additional complexity into the Rules.

Windfarms are, however, the only intermittent generation technology currently connected (or expected to be connected) in the NEM in sufficient volume to impact NEM efficiency and security. Whilst there are other intermittent generation technologies that potentially could be connected in significant volumes in the foreseeable future, at present it is difficult to predict which technologies will have a material impact on NEM efficiency and security, and what the characteristics of those technologies would be.

**The Commission is therefore of the view that the Semi-Dispatch Rules should be developed to operate as simply and efficiently as possible for windfarms, without creating barriers to entry for other technologies to participate in the NEM.**

As such, the Commission has taken a slightly narrow interpretation of NEMMCO's proposal in terms of the specific application of each relevant provision of the Rules. The Commission has comprehensively assessed the proposal in terms of its applicability to current wind generation technology whilst attempting to foresee the requirements of all possible future intermittent generation technologies.

However, the draft Rule is expressed in terms of intermittent generation so that they are more generally applicable to other forms of intermittent generation. This position has been taken on the basis that the inclusion of other forms of generation technologies can be included in the NEM. That is, if at a later date additional requirements are needed in the Rules to integrate future intermittent generation technologies other than wind, then this could be addressed by a subsequent Rule change when the issues are better understood without having to significantly amend the framework for Semi-Scheduled Generators in the Rules created by the draft Rule.

The Semi-Dispatch arrangements contained in the draft Rule would generally only constrain a semi-scheduled generating unit when that unit is involved in a binding constraint.<sup>19</sup> By simplifying the Rules applying to Semi-Scheduled Generators, the Commission believes that the impact of the Semi-Dispatch arrangements in the draft Rule on semi-scheduled generating units that are not involved in binding constraints would not be significant. Therefore, intermittent generators located in non-congested areas of the network should be largely indifferent to whether they register as semi-scheduled or non-scheduled, other than the costs of the necessary dispatch systems.

The remainder of this chapter discusses the Commission's decisions on the key policy issues. Further details on the Commission's reasons regarding specific aspects of the draft Rule are discussed in Appendix A.

## **4.1 Registration and Classification of Intermittent Generation**

### **4.1.1 The Proposal**

The proposed Semi-Dispatch arrangements introduce a new generating unit classification of "semi-scheduled generating unit" and an associated participant category of "Semi-Scheduled Generator".

NEMMCO would apply the following criteria in classifying a generating unit as a semi-scheduled generating unit:

1. The generating unit has an output nameplate rating  $\geq 30$  MW, or the generating unit is part of a group of generating units (that is, a generating system) connected at a common connection point that has a combined output nameplate rating  $\geq 30$  MW; and
2. The generating unit has an output that is intermittent.

### **4.1.2 Analysis**

#### **4.1.2.1 Unit Aggregation**

##### **Issue**

A common concern expressed in submissions is the treatment of aggregated units throughout the Rules.

Windfarms will be the main generation technology to be classified as semi-scheduled generating units at the date this Rule is made. Modern windfarms can consist of over 100 individual turbines connected to the grid through one connection point.

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<sup>19</sup> Conditions for when a semi-scheduled generator is constrained under Semi-Dispatch is discussed in Section 4.5.

The process of registering, and the ongoing obligation of maintaining compliance with the Rules as they are currently applied, for 100 or more individual units would be unnecessarily onerous and costly.

Assisting in simplifying this process, Clause 3.8.3 of the Rules (the aggregation clause) currently allows Generators to aggregate their generating units as a single unit for the purposes of central dispatch and settlements. For example, instead of each individual generating unit receiving a separate dispatch instruction, a single dispatch instruction would be provided to the aggregated group of units. It would then be up to that Generator to determine how to distribute that dispatch instruction between the individual generating units (would likely be carried out by an algorithm within the Automatic Generator Control (AGC) system). The Semi-Dispatch proposal does not attempt to alter this principle for Semi-Scheduled Generators, and as such Semi-Scheduled Generators would be permitted to aggregate clusters of turbines connected at the one connection point.

Auswind considers that the aggregation clause introduces an additional layer of complexity into the registration process in Chapter 2. Auswind appears to suggest that 'aggregation' should be applied at the registration stage.

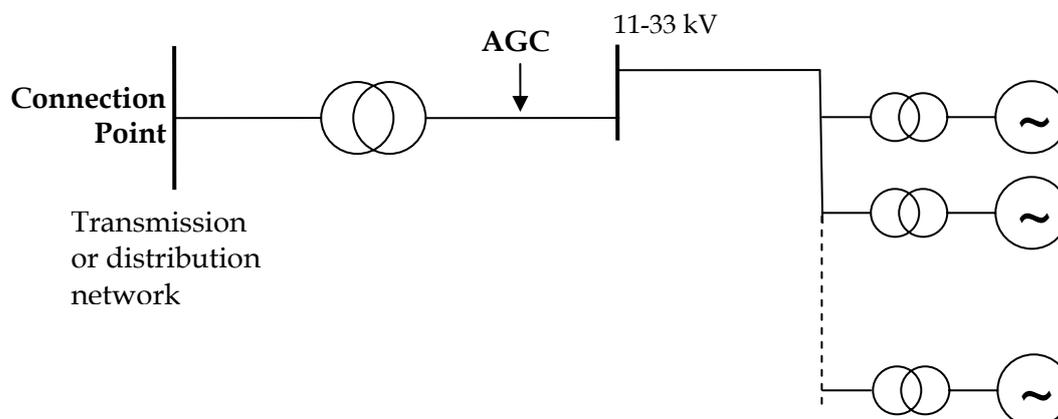
Despite the unit aggregation provisions under Clause 3.8.3 of the Rules, the Commission understands that two issues remain of concern to the wind industry :

1. The Rules are silent on when a Generator may apply for aggregation. This could result in a Generator being required to individually register many wind turbines before applying to aggregate these units.
2. Inconsistent application of the terms generating unit, generating system, and aggregated units throughout the Rules creates misunderstanding or ambiguous interpretation. The wind industry is concerned that although they may aggregate a cluster of individual wind turbines for the purposes of central dispatch and settlements, some parts of the Rules could require compliance on an individual unit (or wind turbine) basis.

## **Analysis**

The physical plant configuration of intermittent generators can be quite different to that of the traditional generation technologies in the NEM. Coal-fired power stations generally consist of a small number of large generating units that are dispatched independently of each other. Gas and hydro power stations generally consist of a small number of generating units that are either dispatched independently of each other, or are aggregated to be dispatched and settled as a group. Windfarms however can consist of over 100 individual turbines connected at a single site, and in this case it would make no sense to dispatch each turbine independently of each other. This issue is of greater significance for solar farms where thousands of solar panels, or millions of solar cells, are connected at the one site. In the case of solar, the Rules are currently unclear as to what should constitute a "unit".

A review of the typical single line diagram for a windfarm, as illustrated in the diagram below, indicates the following characteristics:



1. A windfarm describes the situation where there are multiple physical generating units connected to a common connection point.
  - The nameplate rating of each physical generating unit is small when compared to the aggregated total nameplate rating. For example, a ratio of 15:1 would be typical for a 30 MW windfarm.
  - The multiple generating units are usually identical in manufacture and model when the windfarm is first established.
2. At the common exit point, each physical generating unit output is connected at a busbar on the low side of a common step-up transformer, which is then connected to the distribution or transmission network.
3. The Automatic Generator Control (AGC) point could be located in one of two places, as follows:
  - As multiple devices, one at the terminals of each physical generating unit, or
  - As a single device generally located on the low voltage side of the common step-up transformer.
4. Conceptually, if a set of multiple units, each with a small contribution to the total, were operated in parallel at the one point, there would be no electrical reason why the combined set could not be regarded as if it were a single unit for the purposes of the central dispatch and settlements processes.
5. This principle is already in use, for example with solar panels, where one panel consists of multiple 'cells' which individually contribute to the total output of the panel.

Accordingly, for intermittent generators that consist of a large number of small power sources (relative to the aggregated total), the Commission considers that there appears to be merit in referring to the total power source as a single entity on the basis that the total power source has a single AGC control point. An AGC system

located at a common point could control the combined set of physical generating units by virtue of known algorithms for each of the physical generating units.

**As such, the Commission has amended NEMMCO's proposal to allow intermittent generators to register multiple physical generating units as a single generating unit under the Rules where the multiple physical generating units are:**

- 1. Identical in manufacture, model and nameplate capacity;**
- 2. Connected at the one site; and**
- 3. Has a single AGC control point.**

The Commission considers that this approach to registration significantly simplifies application of the Rules to intermittent generators in two ways:

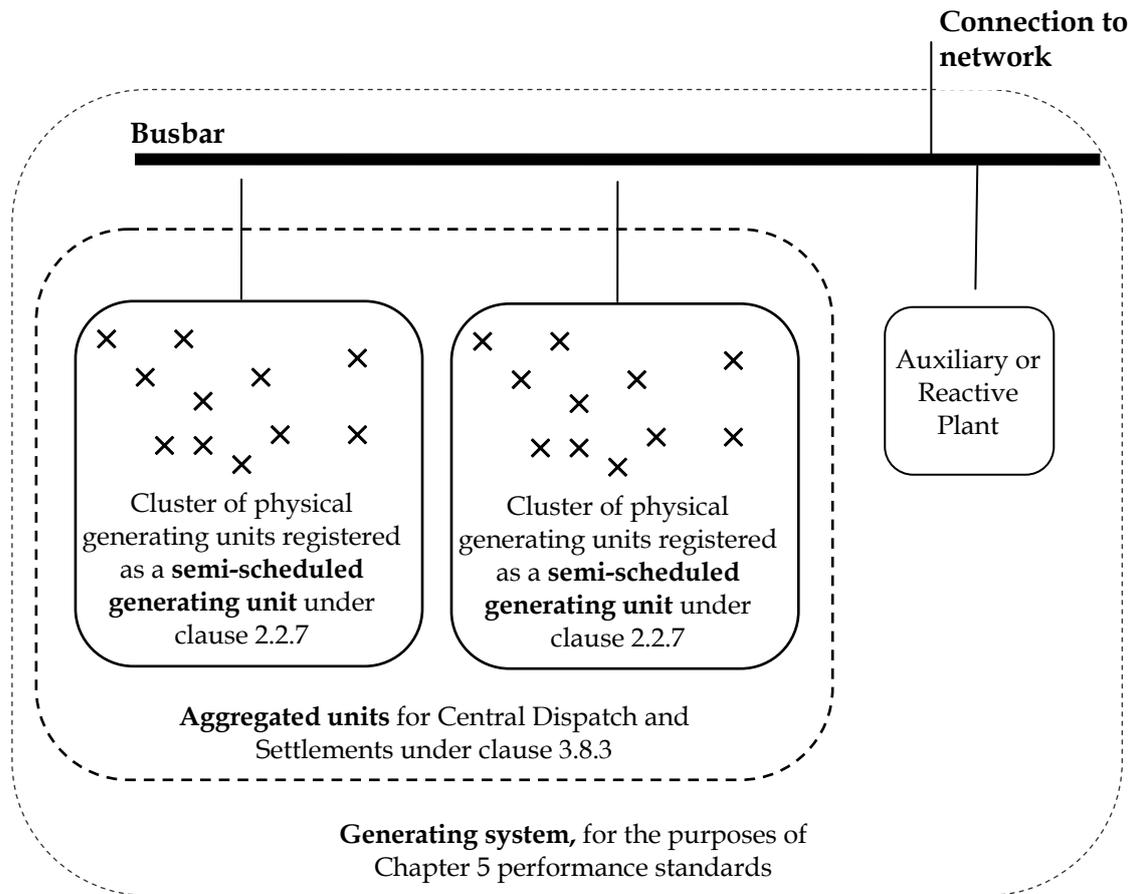
1. The registration process is streamlined because the intermittent generator would only be required to register one generating unit rather than potentially hundreds, and the intermittent generator would not need to apply for aggregation at the time of registration. The aggregation clause and the option to aggregate units after registration would still be available to semi-scheduled generating units for the purpose of central dispatch. In practice, this benefit is likely to be small because NEMMCO currently streamlines the process of registering multiple identical units. However, potential investors not familiar with NEMMCO's process would see this as a major simplification.
2. The Rules would only apply to the registered generating unit as a whole, and not individually to each physical generating unit making up that registered generating unit. This would be the case whether the Rules refer to a generating unit, generating system, or aggregated generating unit/system, thus eliminating a source of confusion raised in submissions.

For power system planning, modelling and forecasting, NEMMCO may still require information at an individual physical generating unit level. The Commission believes NEMMCO has adequate powers to request this information under existing provisions in the Rules even if individual physical units are not individually registered.

In some circumstances an intermittent generator may not wish to, or may not be permitted to register all physical generating units at a site as a single generating unit. This may be for reasons such as connections at different connection points, or variations in the physical generating units installed. If for example an intermittent generator registers two clusters of physical generating units as two separate generating units under the Rules, the intermittent generator may still meet criteria permitting those two generating units to be aggregated under Clause 3.8.3. For this reason, the Rule will allow aggregation of semi-scheduled generating units under Clause 3.8.3.

The diagram below illustrates the relationship between physical generating units, semi-scheduled generating units as registered under Chapter 2 of the Rules, aggregated semi-scheduled generating units aggregated under Clause 3.8.3, and for

completeness a semi-scheduled generating systems for the purpose of performance standards under Chapter 5 of the Rules.



#### 4.1.2.2 Threshold for Registration as a Semi-Scheduled Generator

##### Issue

Under NEMMCO’s proposal, all intermittent generating systems with a combined rating of greater than 30 MW must be registered as semi-scheduled generating units. This includes generating systems connected to distribution networks.

Pacific Hydro considers that the semi-scheduled provisions should not apply to windfarms connected below 100 kV, as small windfarms are unlikely to have a material impact. It notes that a 30 MW windfarm typically only generates 10-12 MW<sup>20</sup> and that it is unlikely that a rural distribution connected generator would be included in a transmission constraint. Pacific Hydro suggest that under NEMMCO’s proposal, an intermittent generating unit would be required to be

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<sup>20</sup> Using this logic a 300 MW open cycle gas-turbine should not be required to be scheduled if it operates less than 10% of the year (or 876 hours). The Commission considers that the size of the generating unit, and hence the should determine whether it is scheduled or semi-scheduled,

semi-scheduled without NEMMCO demonstrating that the generator would ever contribute to a network constraint.

Roaring40s notes that distribution connected windfarms may not have communications infrastructure in the vicinity of the connection point and this may result in “costs for communication systems which are large relative to the overall cost of the project.” Roaring40s suggest that all distribution connected generators (connected to the network at a voltage less than 100 kV) be exempt from classification as semi-scheduled, thus reducing the compliance costs.

NEMMCO<sup>21</sup> site two examples of distribution connected windfarms that affect transmission constraints. The Canunda distribution connected windfarm, as well as the Lake Bonney 1 transmission connected windfarm, impact on one of the constraint equations for Victorian export to South Australia. Further information on the impact of Canunda is provided in Appendix B of NEMMCO’s Rule change proposal. The impact of Challicum Hills windfarm on the Victorian 66 kV network is disputed by Pacific Hydro<sup>22</sup> and discussed further in a later supplementary submission from NEMMCO<sup>23</sup>.

## **Analysis**

The Commission acknowledges that some semi-scheduled generating units will not materially impact congestion in the immediate future. This is true for both transmission and distribution connected semi-scheduled generating units.

However the location of network congestion changes over time, and any Semi-Scheduled Generator could materially impact congestion in the future. This has the potential to happen very rapidly due to a major change in network flows resulting from the loss of a major network, generation or load asset.

Exempting large intermittent generating systems from semi-scheduled registration on the basis that the systems are not currently contributing to congestion raise the following issues:

1. There could be an impact on NEM security and/or efficiency if at some time in the future that intermittent generating system’s contribution to congestion changes; and
2. It will create uncertainty and the possibility for disputes if NEMMCO was able to re-classify an intermittent generator as semi-scheduled in the future.

The Commission is of the view that the Rules for Semi-Scheduled Generators should be largely benign when a semi-scheduled generating unit is not contributing to congestion. Based on this view, an intermittent generator not contributing to congestion should be largely indifferent as to whether it is classified as non-

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<sup>21</sup> Page 2 of the NEMMCO submission dated 1 August 2007.

<sup>22</sup> Pacific Hydro submission dated 14 August 2007.

<sup>23</sup> Page 10 of the NEMMCO submission dated 2 October 2007.

scheduled or semi-scheduled because the obligations for each under the Rules should be similar when that generating unit is not contributing to congestion.

In addition the Commission believes the incremental costs of meeting requirements for Semi-Dispatch are relatively low. These costs are set out below.

#### Capital Costs

Active power control and communications are existing technical requirements for intermittent generators under Clauses S5.2.5.14 and S5.2.6.1 of the Rules, respectively. Intermittent generators are also required under the current Rules to provide real-time information to NEMMCO for forecasting purposes. Additional capital expenditure would be required for systems to enable Semi-Scheduled Generators to receive dispatch instructions from NEMMCO.

#### Operating Costs

Windfarms would be required to submit data to NEMMCO to facilitate the Unconstrained Intermittent Generation Forecast, however this will be required irrespective of Semi-Dispatch. As Non-Scheduled Generators, intermittent generators have been price-takers in the NEM. Intermittent generators can choose to continue being price-takers by submitting default offers to NEMMCO and not actively re-offering. The Commission agrees with submissions that Semi-Scheduled Generators should not be required to operate 24-hour on-site control rooms. Operating costs for Semi-Scheduled Generators not contributing to congestion should be minor.

The Commission also does not support creating a connection voltage threshold for Semi-Dispatch compliance.<sup>24</sup> The Commission acknowledges the argument that distribution connected intermittent generators are less likely to contribute to congestion, but as outlined in NEMMCO's supplementary submission, it is still possible for distribution connected intermittent generators to impact congestion. In addition, the Commission believes distribution connected intermittent generators that have a nameplate rating of greater than 30 MW in capacity should install adequate communications to supply NEMMCO data for operational purposes such as the unconstrained intermittent generation forecast (UIGF). This data should be provided irrespective of the arrangements for Semi-Dispatch contained in this draft Rule. Hence, the Commission considers the argument that the cost of communications for distribution connected intermittent generators would be high relative to the project cost is invalid.

**The Commission is of the view that all intermittent generating units with combined capacity of over 30 MW should be required to be classified as semi-scheduled generating units. This is based on the view that the compliance costs of Semi-Scheduled Generators has been designed, under the draft Rule, to be low for intermittent generators not contributing to congestion. The Commission is also of the view that the risks created by exempting some large intermittent generators has the potential to materially impact NEM efficiency and system security.**

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<sup>24</sup> As suggested by Auswind and Roaring 40s

### 4.1.2.3 Restriction of the application of aggregation under Clause 3.8.3

#### Issue

Under Clause 3.8.3(a) of the Rules:

*“Scheduled Generators or Market Participants who wish to aggregate their scheduled generating units, scheduled network services or scheduled loads for the purpose of central dispatch and settlements must apply to NEMMCO to do so.”*

A Scheduled Generator may apply to NEMMCO for its generating units to be aggregated for the purposes of central dispatch, and settlements. However, this is inconsistent with Clause 3.8.3(d):

*“All requirements in the Rules applying to generating units, scheduled network services and scheduled loads are to apply equally to aggregated generating units, aggregated scheduled network services and aggregated scheduled loads.”*

which requires aggregated scheduled generating units to be treated as a single scheduled generating unit for all provisions of the Rules.

NEMMCO considers that the application of aggregation under Clause 3.8.3(d) should be limited to chapter 3 and Clause 4.8.9, that is to the purposes of dispatch and settlements.

#### Analysis

**The Commission is of the view that the application of aggregation under Clause 3.8.3(d) should be limited to chapter 3 and Clause 4.8.9, that is to the purposes of dispatch and settlements. Therefore, the Commission has adopted the change to Clause 3.8.3(d) proposed by NEMMCO.**

## 4.2 Participation in PASA and Central Dispatch

### 4.2.1 The Proposal

The proposed Semi-Dispatch arrangements would require Semi-Scheduled Generators to participate in Central Dispatch, Predispatch, and PASA. Semi-Scheduled Generators would be required to:

- Submit valid daily energy market offers;
- Allow dispatch instructions to be centrally determined by the NEMDE;
- Electronically receive dispatch instructions;
- Comply with dispatch instructions; and
- Submit STPASA and MTPASA inputs.

## 4.2.2 Analysis

### 4.2.2.1 Dispatch

#### Notification of Available Capacity

The proposed Semi-Dispatch arrangements require Semi-Scheduled Generators to notify NEMMCO of changes to its operational availability.

Roaring40s considers that advising NEMMCO of the change of availability of individual physical generating units, or the impact of the change on the total availability of an aggregated generating unit, would be excessively arduous for a Semi-Scheduled Generator and of minimal value to NEMMCO. Roaring40s proposed that semi-scheduled generating units only be required to report availability when it is more than 30 MW below the registered capacity.

Auswind also suggests that a semi-scheduled generating unit should not be required to notify NEMMCO of changes to availability if the variations are within 30 MW of the rated capacity of the unit.

The Commission understands that the UIGF<sup>25</sup> would provide availability information to Central Dispatch, and as such it is unnecessary for Semi-Scheduled Generators to separately provide this information. Therefore, the Commission considers that removing this obligation simplifies the Rules and compliance requirements for Semi-Scheduled Generators.

**Hence, the Commission has removed obligations on Semi-Scheduled Generators under Clause 3.8.4 (Notification of scheduled capacity) of NEMMCO's proposed Rule as this obligation would be met through the UIGF.**

The Commission accepts the view in submissions that the provision of regular updates to NEMMCO on minor changes in availability is unnecessary. This view is captured in the new obligations to provide data to NEMMCO for the purposes of the UIGF discussed in Chapter 4.4 of this draft Rule determination.

#### Self-commitment, Self-decommitment, and Self-dispatch levels

The proposed Semi-Dispatch arrangements capture Semi-Scheduled Generators in the following areas: Self-commitment, Self-decommitment, and Self-dispatch levels.

Auswind states that these rules are confusing when applied to windfarms, and are not consistent with the actual operation of intermittent plant. Auswind also points out that at a generating unit level, the requirement to provide 2-days notice in advance of a Self-decommitment event for a wind turbine is impractical.

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<sup>25</sup> See Section 4.4

The Commission agrees with Auswind in that these Rule provisions are confusing when applied to intermittent generators. The output from windfarms varies with the wind and NEMMCO is notified of expected generation levels from the UIGF. It is therefore unnecessarily onerous for Semi-Scheduled Generators to be required to comply with Self-commitment processes. Removing this obligation simplifies the Rules and compliance requirements for Semi-Scheduled Generators.

**The Commission does not believe there is a need for or benefit from adding obligations on Semi-Scheduled Generators under Clause 3.8.17 (Self-commitment) and Clause 3.8.18 (Self-decommitment), and as such has removed these obligations on Semi-Scheduled Generators from these clauses in NEMMCO's proposal.**

### **Dispatch inflexibilities**

The proposed Semi-Dispatch arrangements allow Semi-Scheduled Generators to utilise dispatch inflexibility profiles.

Auswind states that wind generating units can't meet either the slow start profile or the bid inflexibility profile.

It is not clear what condition would impose an 'abnormal plant condition or other abnormal operating requirement' on a semi-scheduled generating unit, that would require an inflexibility profile. For a semi-scheduled generating unit, it would be expected that if a fault condition developed, one or more physical generating units would be shut down for repair. This would simply be reflected in the availability of the generator, as defined by the UIGF. This argument also applies to testing and commissioning of new physical units.

The Commission is of the view that dispatch inflexibility is unnecessary for Semi-Scheduled Generators because under the proposal Semi-Scheduled Generators already have the freedom to operate their generator at whatever level they wish when the generating unit is not involved in a binding constraint.

**The Commission does not believe there is a need or benefit from adding a Rule permitting Semi-Scheduled Generators to utilise dispatch inflexibility profiles, and as such has not accepted NEMMCO's proposed changes in this regard.**

### **Re-bidding**

The proposed Semi-Dispatch arrangements require Semi-Scheduled Generators to comply with the re-bidding requirements in Clause 3.8.22.

Roaring40s understands that the re-bidding requirements in Clause 3.8.22 are intended to prevent inappropriate exercise of market power in the NEM through withdrawal or repricing of capacity at short notice. Roaring40s considers that NEMMCO has not provided any evidence to demonstrate that intermittent generators will be likely to abuse their market power. Roaring40s believes that these re-bidding requirements are very prescriptive in nature and are likely to lead to technical breaches, and associated penalties and loss of reputation. Therefore,

Roaring40s considers that the re-bidding requirements in Clause 3.8.22 should not apply to semi-scheduled generating units.

Auswind states that the rebidding provisions are highly prescriptive and create the potential for a technical breach of these requirements without either an inappropriate intent to influence market outcomes or an actual impact on market outcomes.

The Commission believes that if Semi-Scheduled Generators are to be dispatched based on submitted offers, then Semi-Scheduled Generators should have the right to alter those offers through rebids. As Semi-Scheduled Generators submit changes to availability through the UIGF, they would only need to make re-bids when moving capacity between price bands. As Semi-Scheduled Generators are generally price-takers in the NEM, the Commission does not expect Semi-Scheduled Generators to need to utilise the re-bidding provisions often. Hence, if the rebidding provisions are onerous, their impact on the operations of a Semi-Scheduled Generator would still be minor due to infrequent use.

The Commission does not accept the argument that Semi-Scheduled Generators are unlikely to inappropriately re-bid capacity. While this could be true, the Commission believes the re-bidding provisions should apply equally to all generating units as these provisions provide an important safeguard to protect the integrity of the central dispatch process.

**The Commission believes the rebidding provisions are important to maintaining the integrity of the central dispatch process, and as Semi-Scheduled Generators should rarely need to make re-bids, the Commission has not added exemptions to these provisions for Semi-Scheduled Generators.**

#### **4.2.2.2 PASA**

Roaring40s consider that forecasting the output of intermittent generators over the PASA timeframes, particularly the ST-PASA timeframe, is difficult and a decision to direct a plant or reserve trade is unlikely to be affected by the availability of wind generators.

Roaring40s is also concerned that the proposal appears to create a requirement for the availability of individual generating units to be reflected in PASA, even though the individual units are likely to be 2-3 MW in size. Roaring40s provided the following options for improvements to obligations on Semi-Scheduled Generators with regards to PASA:

- Remove the requirement for semi-scheduled generating units to participate in PASA on the basis that their impact would be small and NEMMCO has not demonstrated it to be material.
- That semi-scheduled generating units only be required to report availability when it is more than 30 MW below the registered capacity.

- That the accuracy of the PASA availability data be limited to the nearest 100 MW on the basis that the generation assumed in PASA is likely to be only of the order of 25% of the available generation.<sup>26</sup>

Vestas expressed concern with the proposed obligations on Semi-Scheduled Generators with regard to PASA including:

- Additional administrative costs for windfarms to forecast plant availability 2 years out for MTPASA;
- Unnecessary to update PASA data weekly as this information may not vary on a weekly basis; and
- Taking one or two turbines out of service for maintenance will have only a small impact on the total windfarm output, and an immaterial impact on the NEM.

Auswind suggest that a threshold be introduced within which no adjustment to the MTPASA is required to be submitted to NEMMCO. Auswind states that this would substantially reduce administrative overheads for operators without compromising the effectiveness of the MTPASA processes.

The Commission does not believe it is necessary for Semi-Scheduled Generators to submit any data to NEMMCO for the purposes of PASA. The “availability” of an intermittent generating unit can be misleading. For example, if a 2 MW wind turbine is declared available to generate, it may only be capable of generating 0 or 1 MW depending on wind conditions. It is for this reason that the UIGF is being developed to provide information on what a wind turbine is expected to be capable of generating based on forecast wind velocity (and similar forecasting tools would need to be developed for other intermittent generation technologies should their development reach a material level).

**The Commission is of the understanding that the UIGF would provide expected generation data for Semi-Scheduled Generators for the PASA processes. As such, the draft Rule does not include the obligation contained in the proposed Rule for Semi-Scheduled Generators to provide data to NEMMCO for the purposes of PASA.**

The Commission accepts there is a need for intermittent generators to submit data to NEMMCO as inputs to the UIGF, and as such has discussed this amendment in Chapter 4.4. The Commission agrees with many of the issues raised in submissions with regards to PASA, and has taken them into account in developing obligations for data provision to NEMMCO for the UIGF.

#### **4.2.2.3 Participation in Pre-dispatch**

Under NEMMCO’s proposal semi-scheduled generating units are required to offer their capacity into the Pre-dispatch process.

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<sup>26</sup> 23% and 19% for summer and winter maximum demand Victoria in the 2007 APR. In South Australia ESIPC assumed a value of 5% in its 2007 APR.

Roaring40s state that the planned maintenance schedule can change daily or even hourly as maintenance is targeted to periods of low wind to minimise lost production and to allow the use of cranes. Roaring40s considers that this would mean additional operational resources, or less flexible maintenance practices, would be required, especially if bidding to the nearest MW is required. Roaring40s are also concerned that the wind forecasts may not be accurate enough to add value to the Pre-dispatch process.

Therefore, Roaring40s propose that semi-scheduled generating units only be required to re-bid their availability into pre-dispatch when it is more than 30 MW below the registered capacity, to be consistent with Roaring40s' proposal for PASA.

As with PASA, the Commission believes that the UIGF would provide availability data for Predispatch.

**The Commission is of the view that it is unnecessary for Semi-Scheduled Generators to provide data to NEMMCO for the purposes of Predispatch as this information is provided to NEMMCO for the UIGF. Therefore, the draft Rule does not include the obligation that was contained in the proposed Rule on Semi-Scheduled Generators to provide data to NEMMCO for the purposes of Pre-dispatch.**

The Commission has taken Roaring40s proposal regarding a 30 MW threshold into account when developing the obligations for data provision to NEMMCO for the UIGF as discussed in Chapter 4.4.

### **4.3 Control of Intermittent Generation through Network Constraints**

#### **4.3.1 The Proposal**

The proposed Semi-Dispatch arrangements would allow NEMMCO to formulate network constraints with semi-scheduled generation terms on the left-hand-side of the constraint equation. This allows the semi-scheduled generation terms to be optimally dispatched by NEMDE in the same way as scheduled generation.

#### **4.3.2 Analysis**

**The Commission is of the view that the control of Intermittent Generation through constraint equations in NEMDE is a fundamental component of the Semi-Dispatch proposal. The Commission does not consider there is a feasible alternative to this approach to implementing Semi-Dispatch given the current design of NEMDE (which minimises the cost of dispatch based on a set on constraints). No other alternatives for integrating the control of Intermittent Generation into the Central Dispatch process were proposed in submissions.**

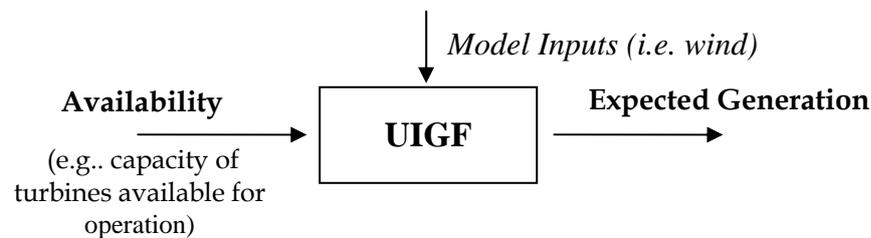
## 4.4 Use of Unconstrained Intermittent Generation Forecasts

### 4.4.1 The Proposal

The proposed Semi-Dispatch arrangements rely on regular forecasts of generation for each semi-scheduled generating unit from the Unconstrained Intermittent Generation Forecast (UIGF) for Dispatch, Predispatch, and PASA.

The UIGF is being developed to forecast the expected level of generation from windfarms. In simple terms, the forecast is a function of the capacity of wind turbines available for generation and the forecast wind velocity at site.

Unlike scheduled generating units, a semi-scheduled generating unit's plant availability for operation does not necessarily equal its available capacity for dispatch. This will depend on its energy source (i.e. wind) at the time of dispatch. It is the role of the UIGF to take the plant availability data from the Semi-Scheduled Generator, and compute the available capacity for dispatch.

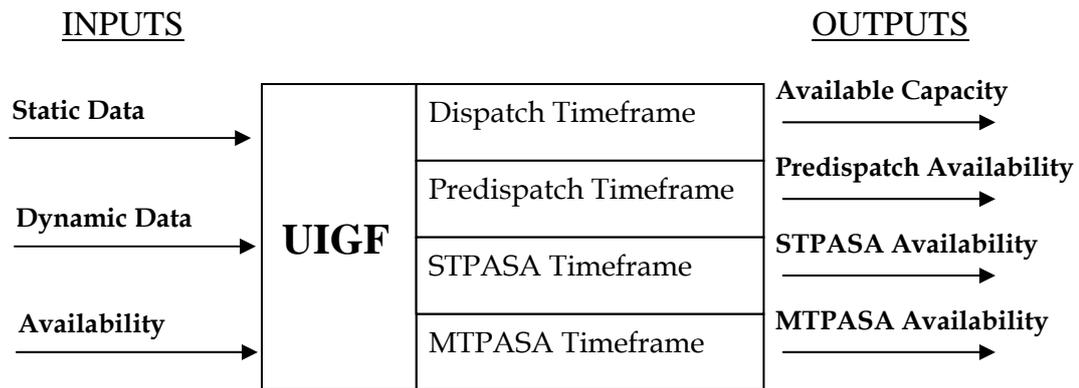


The Commission understands that the model inputs to the UIGF are yet to be confirmed but are likely to be in the following broad areas:

- Static Data - for example wind turbine characteristics, site topology.
- Dynamic Data - for example metered meteorological data from site, meteorological forecasts, unit SCADA data.
- Availability - available generating capacity.

To use windfarms as the most realistic example, the UIGF would provide as its output the forecast generation for each windfarm for the Dispatch, Predispatch, STPASA and MTPASA timeframes.

The diagram below illustrates the UIGF process.



#### 4.4.2 Analysis

The Commission views the UIGF as a fundamental component to Semi-Dispatch. Without the UIGF, NEMMCO would have no basis on which to determine the MW capacity available for dispatch, Predispatch, STPASA or MTPASA for semi-scheduled generating units.

To provide Semi-Scheduled Generators certainty with regards to the operation of Semi-Dispatch, and in particular the obligation on NEMMCO to produce the generation forecasts and not each individual Semi-Scheduled Generator, the Commission believes the Rules should explicitly require NEMMCO to produce the UIGF.

**As such the Commission has added Rule 3.7B placing an obligation on NEMMCO to produce the UIGF. This does not prevent NEMMCO for engaging a third party acting on its behalf to produce the UIGF.**

To ensure NEMMCO has the power to acquire the data necessary to most accurately run the UIGF, the Commission has added new obligations under the Rules requiring Semi-Scheduled Generators to provide the data required for the UIGF. The obligation is similar to the obligation on Scheduled Generators to provide forecast availability data to NEMMCO for use directly in Predispatch, STPASA, and MTPASA.

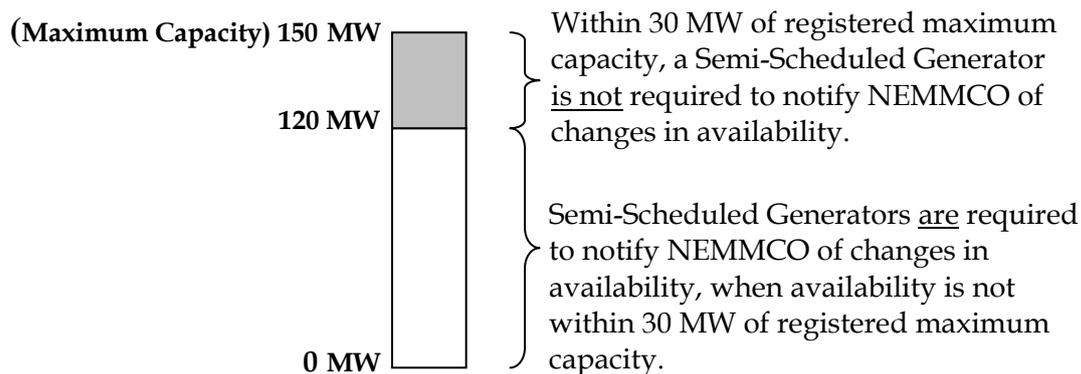
Many submissions<sup>27</sup> raised concerns with the frequency that Semi-Scheduled Generators would be required to update availability information to NEMMCO for the purposes of Predispatch and PASA. Submissions argued that some changes in wind turbine activity would not significantly impact on central dispatch. For example if a 2-3 MW wind turbine is removed from service for maintenance, the impact on NEMMCO's operations and the power system more generally would be negligible. Changes in industrial loads can have a greater influence on the power system than individual wind turbines. For this reason, submissions argued that a

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<sup>27</sup> Auswind, Vestas, and Roaring 40s

threshold should be set, below which Semi-Scheduled Generators would not be required to notify NEMMCO of changes to capacity.

The proposal put forward in submissions, as illustrated in the diagram below, is that if a semi-scheduled generating unit (or aggregation of) is operating or expecting to be operating within 30 MW of its registered capacity, then there is no requirement to advise NEMMCO of changes to availability. However if the semi-scheduled generating unit is operating or expecting to be operating outside of this range, then any changes to availability would be required to be advised to NEMMCO.



The basis on which the 30 MW threshold was established is as follows. An intermittent generator with a nameplate rating of 30 MW or greater would be required to register as a semi-scheduled generating unit. Intermittent generators with a nameplate rating less than 30 MW register as Non-Scheduled Generators, and are thus not required to advise NEMMCO of any variation in capacity. The output of Non-Scheduled Generators can come and go, and NEMMCO hardly notices. Thus if a 30 MW intermittent generator is not required to advise NEMMCO when its availability changes, therefore a larger intermittent generator should not be required to advise NEMMCO when its availability changes by 30 MW or less.

The Commission agrees that the requirement on a Semi-Scheduled Generator to advise NEMMCO of every minor change to availability is unnecessarily onerous. Especially given the fact that on any given days several wind turbines can be removed and returned to service on a rotational basis for maintenance. And the timing of outages is very weather dependant so can be difficult to accurately time. Hence, the Commission agrees that a threshold should be established.

The Commission believes 30 MW is a high threshold, but given that a reasonable basis for this level has been presented, the Commission does not propose an alternate threshold in this draft Rule determination.

Lastly, the Commission considered the need to clarify the meaning of “availability” in relation to intermittent generators. In particular, the Commission considered it necessary to make clear the differences between “available capacity” which is effectively what the UIGF produces taking account of input energy source availability, and “availability” which is the maximum plant availability (i.e. not

limited by energy source availability) and is what a Semi-Scheduled Generator provides to NEMMCO to be taken into account in producing the UIGF. To avoid confusion between the defined term of “available capacity”, the Commission has created an internal definition for the purposes of availability. In this context “availability” means the capacity of a semi-scheduled generating unit available to the electrical power conversion process to convert the input energy into electricity.

**Hence, under the new draft Rule 3.7B, a Semi-Scheduled Generator will not be required to advise NEMMCO of changes to availability for the purpose of Predispatch, STPASA and MTPASA if availability is within 30 MW of registered capacity.**

## **4.5 Conditions for Semi-Dispatch Compliance**

### **4.5.1 The Proposal**

Under the proposed Semi-Dispatch arrangements, NEMDE would determine and issue a dispatch cap for every semi-scheduled generating unit, in much the same way that NEMDE currently issues dispatch targets for Scheduled Generators. However the dispatch caps for semi-scheduled generating units would vary in their application from dispatch targets for Scheduled Generators in the following two ways:

1. As the name implies, a dispatch cap would impose a cap on a semi-scheduled generating unit’s generation. The semi-scheduled generating unit would be free to generate at the level of the dispatch cap, and any level below the dispatch cap.
2. A semi scheduled generating unit would only be required to comply with the dispatch cap during a dispatch interval that has been classified as a semi-dispatch interval for that particular semi-scheduled generating unit. Therefore, a semi-scheduled generating unit would be permitted to disregard the dispatch cap and generate at any level they wish during non-semi-dispatch intervals.

A dispatch interval would be declared as a semi-dispatch interval when either of the following conditions are satisfied:

1. The dispatch cap is limited by a binding or violated network constraint equation;  
or
2. The dispatch cap is otherwise below the UIGF as a result of either a purely inter-regional limitation, or an offer or market-related limitation.

Semi-dispatch intervals would be determined on an individual unit basis. It would be quite normal for one semi-scheduled generating unit to be declared to be in a semi-dispatch interval, whilst others are not.

### **4.5.2 Analysis**

The Commission believes that the dispatch cap and dispatch cap compliance conditions have been appropriately defined in the proposal to accommodate Semi-

Scheduled Generators in Central Dispatch whilst minimising the impact of Semi-Dispatch on intermittent generators.

### **Dispatch Cap**

Defining a dispatch cap rather than a dispatch target for semi-scheduled generating units is important because intermittent generators would not always be physically capable of meeting a target due to the uncertain nature of their input energy source.

Taking windfarms for example, modern control systems allow the output of a windfarm to be limited, but depending on wind strength a windfarm may not be capable of generating up to a target established by NEMDE.

The main reason for introducing Semi-Dispatch is to allow NEMMCO to efficiently reduce the output of intermittent generators to manage network limits. The Commission believes a dispatch cap gives NEMMCO appropriate control of intermittent generators to manage network limits.

### **Conditions for Declaring a “Semi-Dispatch Interval”**

The proposal to only require a semi-scheduled generating unit to comply with its dispatch cap during semi-dispatch intervals reduces the impact of Semi-Dispatch on intermittent generators. During non-semi-dispatch intervals, a semi-scheduled generating unit would not be required to limit its generation output and would essentially operate under similar obligations as a non-scheduled generating unit.

A dispatch interval would be declared a semi-dispatch interval for a semi-scheduled generating unit when the dispatch cap for that unit is limited by a binding network constraint, or the dispatch cap is determined to be less than or equal to the UIGF. This would generally occur when the semi-scheduled generating unit is involved in a binding network constraint, or is constrained off for market reasons (i.e. its offer price is higher than the offer price of other generators).

As price-takers currently in the NEM, intermittent generators accept the spot price derived by NEMDE with little influence over the derivation of that price. If the intermittent generator does not wish to generate at a given spot price, the only real option is to back-off or disconnect their generator.

Under the Semi-Dispatch arrangements, it is feasible for an intermittent generator to employ similar strategies. Based on financial contract positions, the Semi-Scheduled Generator could submit a default offer and let NEMMCO automatically back-off generation from that unit when the spot price drops to a certain level. A Semi-Scheduled Generator that has contracted 100% of its variable output could choose to offer all of its capacity at the market floor price. There would be no reason for a Semi-Scheduled Generator to monitor the NEM more than it may currently do as a Non-Scheduled Generator.

Based on marginal costs, the offers from semi-scheduled generating units could be structured below those of scheduled generating units who would generally factor fuel costs into offer prices. Based on this view, Semi-Scheduled Generators would

rarely be constrained-off for market related reasons because under efficient economic dispatch the higher cost scheduled generating units would be backed off first. This would also be true when multiple generators are included on the left-hand-side of constraint equations, in which case the higher cost generators would be backed off first.

However Scheduled Generators sometimes bid below costs for reasons such as avoiding the costs of shutting down a large thermal generating unit, for contract portfolio reasons, or when competing for limited access to the Regional Reference Node.<sup>28</sup> In one of these situations a semi-scheduled generating unit may be constrained off before a scheduled generating unit.

It is therefore the Commission's view that constraints due to network limitations would be the predominant reason for a semi-scheduled generating unit being constrained off by Semi-Dispatch. This would be an appropriate outcome because when a semi-scheduled generating unit is not contributing to congestion the generating unit would be largely unaffected by Semi-Dispatch.

## **4.6 Requirements for Dispatch Cap Compliance**

### **4.6.1 The Proposal**

Under the proposed Semi-Dispatch arrangements, for all semi-dispatch intervals, a semi-scheduled generating unit would be required to limit its output at the end of that dispatch interval to less than or equal to the value of its dispatch cap.

A semi-scheduled generating unit is not required to comply with its dispatch cap during non-semi-dispatch intervals.

A semi-scheduled generating unit would not be required to follow a particular profile during a dispatch interval. Although the FCAS Regulation Causer Pays provisions under Clause 5.15.6 incentivise a Semi-Scheduled Generator to ramp its actual generation at a uniform rate over a semi-dispatch interval to the dispatch cap, and at a uniform rate over a non-semi-dispatch interval. Any deviations from a uniform rate of change that contributes to frequency deviation will add to the FCAS Regulation Causer Pays factors for that generating unit, and will thus lift the proportion of FCAS Regulation costs attributable to that generating unit.

Under Clause 4.9.2(b) of NEMMCO's proposed Rule change NEMMCO has the ability to instruct a generator to adjust transformer tap changers, voltage control set points and reactive power control set points.

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<sup>28</sup> When a constraint is binding between a generator and the Regional Reference Node, that generator can bid below cost without influencing the Regional Reference Price. This can result in generators bidding to -\$1000 to compete for limited access to the Regional Reference Node.

## 4.6.2 Analysis

### Dispatch Cap Compliance

The Commission believes that the proposal places appropriate compliance obligations on Semi-Scheduled Generators for reasons discussed in Section 1.5.

### Ancillary Service Transactions

Under Clause 3.15.6A(k)(5) of NEMMCO's proposal, a semi-scheduled generating unit is considered to be contributing to a frequency deviation unless it ramps linearly in response to a dispatch cap during a semi-dispatch interval.

Roaring40s considers that this creates an incentive for semi-scheduled generating units to delay their response to minimise market FCAS costs, thus giving precedence to minimising FCAS costs over system security by not adjusting the generator's output as quickly as possible. Roaring40s propose that Clause 3.15.6A(k)(5) be modified so that a semi-scheduled generating unit is not considered to be contributing to a frequency deviation if it is ramping in response to a dispatch cap. This view can be argued equally for scheduled generating units. As the Commission is not aware of this issue for Scheduled Generators, the Commission is not convinced that the issue would be material for semi-scheduled generating units.

It is noted that Auswind is only concerned with the definition of 'uniform rate' for a non-dispatched interval. Auswind states that it may not be possible to change the output of a windfarm in a uniform fashion.

Intermittent generators are currently required to contribute to the cost of ancillary services, and the Commission is not convinced of a need to change this arrangement in order to exempt intermittent generators from this requirement.

However, NEMMCO's proposal changes the methodology for determining FCAS Regulation Causer Pays factors for semi-scheduled generating units. Currently intermittent generators registered as Non-Scheduled Generators are required to change their output at a uniform rate over a dispatch interval to avoid being deemed to have contributed to frequency deviation. Whereas the proposal adds a requirement that Semi-Scheduled Generators ramp their output at a uniform rate to the dispatch cap.

The Commission does not agree with the additional requirement of ramping to the dispatch cap. If a Semi-Scheduled Generator is unable to reach its dispatch cap (i.e. due to a drop in wind strength), then the Semi-Scheduled Generator could potentially be penalised (under the FCAS Regulation Causer Pays provisions) for not ramping its output to the cap. Semi-Dispatch is based on capping the output of Semi-Scheduled Generators and allowing the Semi-Scheduled Generator freedom to generate below that cap, not imposing a fixed generation target. As such, in order to be consistent with this principle, FCAS Regulation Causer Pays provisions should not impose penalties on Semi-Scheduled Generators for not reaching the dispatch cap.

However, the Commission is of the view that Semi-Scheduled Generators should be incentivised to change their output at a constant rate of change. The Commission acknowledges Auswind's position that some windfarms are not able to change their output at a constant rate. The Commission accepts that this is true for some windfarms, but the Commission holds the view that if Semi-Scheduled Generators contribute to the need for ancillary services, then they should also proportionately contribute to the cost of those services. This would:

1. Ensure this cost is not inefficiently attributed to other NEM participants;
2. Ensure that the true cost to the NEM of introducing intermittent technologies is well captured in project evaluations; and
3. Incentivise intermittent generators to develop technology to better control their output.

Therefore, the Commission is of the view that any deviations from a uniform rate of change that contributes to frequency deviation will add to the FCAS Regulation Causer Pays factor for a semi-scheduled generating unit.

**As such, the Commission has modified NEMMCO's proposed Rule as reflected in the draft Rule so that the FCAS Regulation Causer Pays factors for Semi-Scheduled Generators are based on deviations from a uniform rate of change of output over a dispatch interval, for all dispatch intervals, with no reference to the dispatch cap.**

## **Voltage Control**

The proposed Rule change gives NEMMCO the ability to instruct a generator to adjust transformer tap changers, voltage control set points and reactive power control set points.

Roaring40s considers that for wind generators at the peripheral of the network the reactive power management and the voltage profile across a windfarm can be critical to achieving compliance with generator performance standards, particularly for riding through disturbances. Therefore, Roaring40s considers that windfarms that have been directed by NEMMCO to adjust their transformer tap changer, voltage control set point and reactive power control set point should be exempted from meeting its relevant performance standards.

The Rules do not currently require Non-Scheduled Generators to provide facilities for NEMMCO to vary the transformer tap changers and the excitation control system voltage set-point. The Commission is of the view that this control is not needed to implement Semi-Dispatch.

Hence, the Commission has modified NEMMCO's proposed Rule as reflected in the draft Rule to remove the ability for NEMMCO to instruct a generator to adjust transformer tap **changers, voltage control set points and reactive power control set points.**

## **4.7 Monitoring of Dispatch Cap Conformance by NEMMCO**

### **4.7.1 The Proposal**

Under Clause 3.8.23(a) of the Rules NEMMCO is required to continuously monitor the conformance of scheduled units with their dispatch target, and to declare that unit non-conforming if it fails to respond to a dispatch instruction within a tolerable time and accuracy, as determined in NEMMCO's reasonable opinion.

Under the proposed Semi-Dispatch arrangements, all semi-scheduled generating units would be subject to essentially the same conformance monitoring process that applies to scheduled generating units.

### **4.7.2 Analysis**

To maintain the integrity of the Rules, Semi-Scheduled Generators must be subject to conformance monitoring. The Commission sees no reason not to consistently apply the conformance monitoring processes that currently applies to Scheduled Generators.

## **4.8 Transition into the Semi-Dispatch Arrangements**

### **4.8.1 The Proposal**

Under the proposed Semi-Dispatch arrangements, intermittent generating units that are existing at the date the proposed Rule takes effect would not be required to re-register as a "Semi Scheduled Generator" or to meet any additional requirements. An "existing generating unit" would be defined as "a classified generating unit" or a generating unit for which there is a connection agreement that was executed by all parties to the connection agreement before the commencement date and that is in force at the time NEMMCO is to approve its classification."<sup>29</sup>

### **4.8.2 Analysis**

A number of stakeholders disagree with using the connection agreement as a measure of whether an intermittent generator project is committed or not. Other options proposed by stakeholders included:

#### **Demonstrated sunk cost of over \$5M**

Roaring40s supports the grandfathering of the non-scheduled status of generators with existing connection agreements but believes this should be extended to capture advanced generation projects with significant levels of sunk investment. Roaring40s propose that grandfathering should apply to projects where the proponent can

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<sup>29</sup> Clause 11.11.1 of the Proposed Rule Changes.

demonstrate a sunk investment of over \$5M, as well as projects that have a signed connection agreement.

### **Automatically reclassify all existing generators as semi-scheduled**

TrustPower does not consider that the signing of a connection agreement is an appropriate indication that an intermittent generator project is committed. One option proposed by TrustPower was that all existing intermittent generators be automatically reclassified as semi-scheduled, unless the generator demonstrates (to NEMMCO) that it is not feasible.<sup>30</sup> This alternative option is similar to that discussed in Section 10.2.1 of NEMMCO proposal for an alternative arrangement where all significant intermittent generators be reclassified as scheduled.

TrustPower considers that the additional costs for control and communications equipment that are necessary to comply with the semi-scheduled requirements are low, except in remote areas. This means that the majority of windfarms, particularly in South Australia, could be reclassified as semi-scheduled.

Flinders Power considers that semi-scheduled status should be applied across both new and existing large Non-Scheduled Generators as it considers this would better meet the NEM Objective. Flinders Power also considers that Non-Scheduled Generators effectively get “firm access and dispatch priority over all other generation”<sup>31</sup> and, consequently, it believes that “rationing network capacity should be undertaken on a common basis across the NEM.”<sup>32</sup> Flinders Power does, however, consider that exceptions should be allowed where it would be technically impractical or impossible for an existing intermittent generator to be modified to meet the semi-scheduled requirements.

While agreeing that requiring existing wind generators to be semi-scheduled would increase uncertainty and hence raises investment costs, ESIPC considers that “the market is based on the principle of security constrained, optimised dispatch and offers no guarantee that constraints might not be placed on individual generators as necessary.”<sup>33</sup> Further ESIPC states that “The Rule change process exists to provide for the evolution of the market in accordance with the efficiency objective. This does mean that from time to time participants may have additional requirements placed on them particularly in relation to the provision of information.”<sup>34</sup> ESIPC also noted that in the second reading speech implementing the NEL in 2005 it was stated that “any person wishing to enter the market should not be treated more or less favourably than persons already participating in the market.”<sup>35</sup> Therefore, ESIPC suggest that all intermittent generators greater than 30 MW be classified as semi-scheduled, with transitional arrangements for NEMMCO to assess applications

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<sup>30</sup> Page 3 of the TrustPower submission dated 6 July 2007.

<sup>31</sup> Page 4 of the Finder Power submission dated 6 July 2007.

<sup>32</sup> Page 4 of the Finder Power submission dated 6 July 2007.

<sup>33</sup> Page 4 of the Electricity Supply Industry Planning Council submission dated 6 July 2007.

<sup>34</sup> Page 4 of the Electricity Supply Industry Planning Council submission dated 6 July 2007.

<sup>35</sup> Page 4 of the Electricity Supply Industry Planning Council submission dated 6 July 2007.

for exemptions where an existing generator cannot physically comply with the semi-scheduled provisions. ESIPC considers that the efficiency gains from incorporating most installed windfarms would outweigh the considerations of grandfathering.

ESIPC considers that, in the absence of a requirement for all intermittent generators to be classified as semi-scheduled, the existing windfarms that already have arrangements for the control of their output by the network service provider should be required to be classified as semi-scheduled, stating that “in these cases, the generators have the capability to be controlled and are aware of the need to control their dispatch when necessary from a security point of view.”<sup>36</sup> ESIPC also considers that as many windfarms as possible should be included in the new wind forecasting regime, which is being implemented using the semi-scheduled provisions.<sup>37</sup>

### **Commitment criterion in the NEMMCO SOO**

TrustPower also proposed using the criteria used by NEMMCO in the SOO to determine if a project is committed, and hence exempt from the requirement to be classified as semi-scheduled. For the purposes of the 2007 NEMMCO SOO:<sup>38</sup>

“To be considered as committed, projects (including augmentations) must satisfy all of the following criteria:

- The project proponent has acquired, or has commenced legal proceedings to acquire, land for the construction of the project.
- Contracts for the supply and construction of the project’s major plant or equipment (generators, turbines, boilers, transmission towers and conductors), including contract provisions for project cancellation payments, have been executed.
- The project proponent has obtained all required planning and construction approvals and licences, including completed and approved environmental impact statements (which include planning and environmental approvals from duly authorised planning bodies at both State and Federal Government levels).
- Financing arrangements for the proposal, including debt plans, have been finalised and contracts executed.
- Construction has either commenced or a firm date has been set for it to commence.”

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<sup>36</sup> Page 5 of the Electricity Supply Industry Planning Council submission dated 6 July 2007.

<sup>37</sup> Page 5 of the Electricity Supply Industry Planning Council submission dated 6 July 2007.

<sup>38</sup> Page 1-9 of the 2006 NEMMCO Statement of Opportunities.

## Use of the connection agreement

TrustPower also considers that if a signed connection agreement is regarded as the most appropriate test of whether a generating unit is committed then there must be a rigorous test of the status of the connection, with a project being regarded as existing if:

“(a) the connection agreement has all conditions precedent to the operation of the connection agreement satisfied or waived prior to the Semi-Dispatch Rule Effective Date; and

(b) the windfarm design and connection arrangements have not been materially changed after the Semi-Dispatch Effective Date, including a change in wind turbine manufacturer or significant model change or a material change in the negotiated performance standards.”<sup>39</sup>

TrustPower considers these conditions would ensure that the connection agreements have not just been put in place to secure classification as a non-scheduled generating unit.

## Analysis

The Commission recognises the importance of formulating an appropriate transition to the Semi-Dispatch arrangements. Semi-Dispatch must apply as broadly as possible to maximise NEMMCO’s ability to efficiently manage network limits, but cannot be applied retrospectively. The objective with grandfathering should be to not detrimentally alter the economics of committed projects and create regulatory risk and uncertainty for future investment.

### **The Commission supports grandfathering generating units in the category of non-scheduled generating units for generators registered before the issue of the final Rule determination.**

The Commission also believes that certain intermittent generator proponents that have committed to the construction of an intermittent generator based on the current Rules, but have not yet registered their generating units by the commencement of the Rule, should have the option to be grandfathered as non-scheduled generating units (or scheduled generating units, if the circumstances require). Two questions arise in implementing this policy: firstly, at what date must a project be considered committed to be grandfathered; and secondly, on what criteria is a project to be determined to be committed.

The simplest solution to the questions identified in the above discussion is to grandfather all generating units registered as non-scheduled generating units at the time the Rule commences operation. As the basis of assessing the grandfathering options, the Commission has assumed a Rule commencement

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<sup>39</sup> Page 5 of the TrustPower submission dated 6 July 2007.

date of **1 January 2009**. However, the Commission considers that such an option will not provide a robust framework to meet the needs of efficient investment in intermittent generation as well as the objectives of reliability of supply. The Commission has noted the following considerations in relation to this option:

- It would provide intermittent generation proponents a high degree of certainty and opportunity to develop and register new generators before the Rule commences;
- It could result in a large number of registration applications just prior to Rule Commencement to avoid semi-scheduled classification; and
- Due to the likely long lead time between the making of the final Rule and the commencement of that Rule, this approach could result in number of large intermittent generators in the NEM that NEMMCO is unable to efficiently control to manage network limitations.

The Commission therefore considered that grandfathering all intermittent generating units registered as non-scheduled generating units at the commencement date would not promote the NEM objective particularly in relation to ensuring the reliability and security of supply of electricity and the national electricity system.

The Commission also believes that using “sunk cost” as the basis for grandfathering as proposed in some submissions would be too difficult to measure and verify and as such has not considered this option further.

Having considered the views put forward in submissions, the Commission has assessed the following options for addressing the two questions raised above.

### **Criteria for grandfathering prospective semi-scheduled generating units**

The Commission considers that a generating unit that could be registered as a semi-scheduled generating unit at Rule commencement should meet specified criteria in order to be grandfathered as a non-scheduled generating unit. The Commission considered three alternative criteria:

#### **1. Grandfather all generators with a Connection Agreement Executed**

The Commission has noted the following relevant considerations:

- A connection agreement is an arbitrary measure and does not necessarily provide a good indication of project commitment. However, it is a criterion that can be identified and determined as a matter of fact thereby serving as an objective test.
- A project proponent may be able to obtain a connection agreement before a project is 100% committed.

## **2. Grandfather all generators classified as “Committed Windfarms” under the 2007 Statement of Opportunities (SOO)**

Considerations noted by the Commission:

- This is an unbiased list of projects as it was prepared by NEMMCO without the knowledge that the list could be used to grandfather rights.
- Is based on objective and defensible criteria.
- Although the SOO was published in October, the SOO lists only projects that were committed in May 2007.
- Projects that reached committed status between May 2007 and the date of the final Rule determination based on the current Rules would not be grandfathered non-scheduled classification, potentially creating regulatory risk in the eyes of investors.
- It could be argued that investors in undertaking prudent regulatory analysis should have known that Semi-Dispatch was highly likely.
- Additionally the incremental cost of compliance for generators not contributing to congestion is small.

## **3. Grandfather all generators classified as “Committed Windfarms” under the 2007 Statement of Opportunities (SOO) criteria as at a specified date such as the release of the draft Rule determination or release of the final Rule determination.**

Considerations noted by the Commission:

- Is based on objective and defensible criteria.
- Ensures all committed projects at the time of the draft/final Rule determination are grandfathered as non-scheduled classification.
- Applying the SOO criteria at the release of the draft Rule determination would ensure more intermittent generators are captured by Semi-Dispatch and avoid a flood of registrations before the release of the final Rule determination.
- However this would legally be difficult to implement because for the period between the draft and final Rule determinations, the classification of semi-scheduled would not be available to NEMMCO for registration.
- The earliest the semi-scheduled classification could be introduced into the Rules would be at the release of the final Rule determination. The remainder of the Semi-Dispatch Rules would still commence on 1 January 2009.

The Commission also considered combining the three different sets of criteria. The effect of this combination would be that a generating unit that met the criteria identified in points 1, 2 or 3 above at a specified date such as the release of the draft

Rule determination or release of the final Rule determination, would have the option to be grandfathered as a non-scheduled generating unit or scheduled generating unit.

The Commission considers that the criteria used in the 2007 SOO for classifying generators as “Committed Windfarms” are the most appropriate criteria for defining committed projects for the purposes of grandfathering prospective semi-scheduled generating units. The SOO criteria are objective, well tested, have been refined over many years, and capture the core elements of whether a project is committed.

The Commission considers that all projects that meet the SOO criteria at 1 January 2008 should be grandfathered. This would include all projects listed as “Committed Windfarms” in the 2007 SOO, plus all projects that reach committed status, as determined by NEMMCO, by 1 January 2008. The Commission believes that 1 January 2008 gives developers with well advanced projects a one month grace period following publication of this draft Rule determination to finalise arrangements to meet the SOO criteria. This period is also sufficiently short so that uncommitted projects that are in the early stages of development would be unable to make the necessary arrangements to meet the SOO criteria having become aware of the Commission’s intended grandfathering approach in the draft Rule determination. These projects would, therefore, be required to be classified as Semi-Scheduled Generators.

The Commission considers that this is the approach that best balances the objective of maintaining the reliability and security of electricity supply with the need to promote efficient investment in, and efficient use of electricity services, including by avoiding retrospectively altering the economics of committed projects.

**Accordingly, the Commission has amended NEMMCO’s proposed Rule in order to grandfather all intermittent generating units that are either:**

- **Registered prior to the publication of the Final Report; or**
- **Meet the SOO criteria for classification as a “Committed Windfarm” at 1 January 2008, including projects that are classified in the NEMMCO 2007 SOO as committed.**

**All other intermittent generating units applying for registration after the publication of the final Rule determination would be considered for classification as a semi-scheduled generating unit under Clause 2.2.7.**

The Commission recognises that the grandfathering issue was raised in many submissions already received on the Rule proposal. However, the Commission welcomes detailed submissions on the grandfathering arrangements as outlined in this draft Rule determination and on the Commission’s reasons for considering that this approach strikes an appropriate balance between the security of supply and the investment incentive consequences of the arrangements.

The Commission is particularly interested in receiving submissions from stakeholders with examples of projects that they believe would be adversely affected by the proposed draft grandfathering provisions such as those:

- that might not meet the SOO criteria by 1 January 2008, or
- those that would not meet the SOO criteria by 1 January 2008, but may have executed a connection agreement by this date.

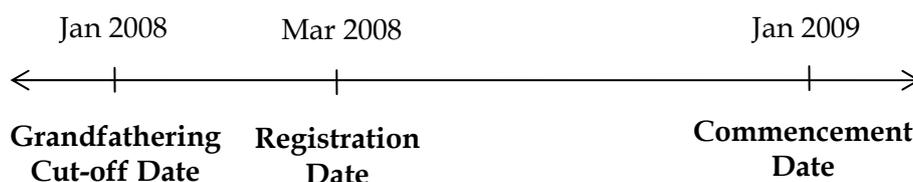
Submissions addressing the grandfathering arrangements should be detailed using specific examples and should clearly articulate why the proponent believes a project should be grandfathered. The Commission will treat commercial sensitive information as confidential, where requested by the stakeholder, in accordance with section 108 of the NEL.

### **Requirements for generating units registered after Rule being made and prior to Rule commencing**

The Commission considers that there are a group of generating units that do not fit into the two categories that will be grandfathered in accordance with the decisions noted above. That is, the generating units are not currently operating in the market as non-scheduled and scheduled generating units or the generating units that do not meet the criteria to be grandfathered. The units not captured by the grandfathering clauses will be those units that at the time the Rule is made are capable of being registered as a semi-scheduled generating unit but cannot be so registered until the Rule commences operation. These units are referred to in the draft Rule as “potential semi-scheduled generating units”.

The Commission considers that these generating units need to be sufficiently captured by the savings and transitional arrangements for two reasons. Firstly, not adequately addressing these generating units has the effect of undermining the Commission’s specific policy decisions in relation to grandfathering. Secondly, clearly identifying the requirements for classification of potential semi-scheduled generating units provides transparency for the registration process as well as providing regulatory certainty for those generators as well as other market participants interacting in the market with such generators.

The Commission has therefore included a split commencement in the draft Rule. The two dates are referred to in the draft Rule as the “registration date” and the “commencement date”. The registration date would be the date that the Rule is made and at this time, the registration clauses of the draft Rule (and those clauses relevant to registration) would commence operation. The commencement date would be the date the rest of the Rule primarily relating to central dispatch would commence operation. This date is assumed to be 1 January 2009. This concept is illustrated below using indicative dates.



The implications of the two dates are that a generating unit that could be classified as a semi-scheduled generating unit at the registration date can be registered in the semi-scheduled generating unit category. However, as the central dispatch provisions would not have commenced operation, these units will operate as non-scheduled generating units until the central dispatch provision commence operation (on the commencement date). As the generating units would already be registered in the category of semi-scheduled generating unit and therefore meet the additional requirements that exist for semi-scheduled generating units over non-scheduled generating units, the transition to operating as a semi-scheduled generating unit should not create any administrative or regulatory hurdles for the Semi-Scheduled Generator.

The Commission considers this approach to best address the “registration gap” created between the Rule being made and the Rule commencing operation. It also ensures those generating units that do not meet the grandfathering criteria and therefore should not be grandfathered (based on the Commission’s reasoning) are integrated into the market as semi-scheduled generating units with minimal administrative and regulatory burdens for both NEMMCO as the registering body and the Semi-Scheduled Generators.

Lastly, the effect of the split commencement date, also allows those non-scheduled generating units and scheduled generating units that have the option of being reclassified to reclassify earlier than the Rule commencement date (i.e. 1 January 2009). Those generating units that are currently operating in the market can either continue to operate as a non-scheduled or scheduled generating unit or alternatively choose to reclassify. Those units that choose to reclassify will be exempt from participant fees for two years after the Rule commencement. However, if those Generators choose to reclassify their units as semi-scheduled generating units after the registration date but prior to the Rule commencing, the units will continue to operate as non-scheduled generating units or scheduled generating units (as the case may be) until the central dispatch provisions commence operation.

Similarly to the effect of a split commencement on potential semi-scheduled generating units, allowing current generators to reclassify their units prior to the central dispatch provisions commencing operation promotes the efficiency of the registration process. As the relevant generating units will meet the criteria for semi-scheduled generating units at the time of registration, the requirement to operate as a semi-scheduled generating unit (which is assumed will be immediate) should not create any additional obstacles,

### **Additional Savings And Transitional Arrangements**

In addition to the grandfathering and related provisions noted above, the Commission has also included some additional savings and transitional arrangements to address matters that create transition issues as a result of the amendments created by the draft Rule. These provisions are:

- A requirement that Semi-Scheduled Generators will be treated as Scheduled Generators for the purposes of paying participant fees until NEMMCO

determines a structure for the payment of participant fees by Semi-Scheduled Generators.

- Any action taken by NEMMCO prior to the Rule commencing for the purposes of amending the timetable to incorporate the Amending Rule will be taken to be valid as long as NEMMCO adheres to the requirement for amending the timetable under the Rules.
- Any action taken by NEMMCO to amend the contribution factors procedure to incorporate contribution factors for Semi-Scheduled Generators will be taken to be valid as long as NEMMCO adheres to the requirement for amending the timetable under the Rules.

The Commission seeks feedback from interested stakeholders as to whether there are any outstanding issues of transition that need to be addressed in the savings and transitional provisions.

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## A Appendix A

The following table outlines the Commission’s decisions in relation to those aspects of NEMMCO’s proposed Rule changes where the Commission is recommending something substantially different to that proposed by NEMMCO, or the Rule change was considered a significant issue in a submission.

The Rule reference numbering refers to reference numbering submitted in NEMMCO’s Rule change proposal.

**Table A**

	<b>Comments from submissions</b>	<b>Commission’s Position</b>
2.2.2(b)	Vestas suggests that the clause should explain in detail the type of communication standards required, or at least make reference to another standard.	The communication standards are specified in Schedule 5.2 of the Rules.
2.2.2A	NEMMCO proposed a new registration clause for Semi-Scheduled Generators under 2.2.2A	The Commission has accepted this proposal as Clause 2.2.7 with some amendments to address the circumstances of registering more than one semi-scheduled generating unit. Further discussion on this matter can be found in Section 4.1.
	<p>Vestas states that windfarms typically operate at a capacity factor of 30%.</p> <p>Vestas suggests that the nameplate rating threshold be lifted to a higher value, such as 100 MW to 150 MW.</p>	<p>The Commission notes that whilst the capacity factor is around 30%, the actual output of the generating unit can be 100% of the nameplate rating for a period whilst sufficient wind is available. The rating of the unit should be the maximum capacity able to be presented at the connection point, even if that unit is not operating at that level for some or all of the time.</p> <p>An example would be a power station with a number of gas turbines aggregated to 3000 MW and with a utilisation of about 1%. This unit has an average output of 30 MW and could be exempt from registering as a Scheduled Generator based on Vestas argument. It would be very difficult for NEMMCO to manage power system security with a 3000 MW non-scheduled generating unit connected.</p>

		Therefore, the rating specified in the clause should be 30 MW for consistency with the requirements for scheduled generating units.
	<p>Auswind states that the implications of this Rule change on small projects with low to medium voltage connections has not been investigated or understood.</p> <ul style="list-style-type: none"> <li>• These smaller projects are in areas of the network for which NEMMCO has no oversight and for which it does not construct constraints.</li> <li>• The LNSP works through any issues in the connection process.</li> <li>• These projects are off-setting local load.</li> </ul> <p>In this regard, AUSWIND would like the threshold for semi-scheduled compliance to be set at a voltage level, rather than at a MW capacity level. Auswind considers that 100 kV would be a suitable level at which responsibility for significant intermittent generation could be determined.</p>	The Commission acknowledges that it is less likely for low to medium voltage connected generating units to impact network limits on the main grid. However the Commission considers that generating units should still participate in Semi-Dispatch because although less likely they can still impact on NEMMCO’s management of system security. Additionally the Commission considers compliance costs would be low for intermittent generators not contributing towards congestion. Further discussion on this matter can be found in Section 4.1.
	Auswind and Vestas state that the Rules are confusing with regard to when an obligation applies to an individual generating unit, an aggregated group of units, or a generating system.	The Commission has amended NEMMCO’s Rule proposal to allow multiple physical units to be registered as a single semi-scheduled generating unit (for reasons discussed under Section 4.1).  Clause 2.2.7(k) includes a reference to the aggregation Clause 3.8.3 to aid understanding for a project proponent not familiar with the Rules.

	<p>Vestas suggests that allowance should be made for dispute resolution and a particular clause for dispute resolution should be adopted. Vestas has suggested that reference to Clause 8.2 of the Rules be included in this provision.</p>	<p>The provision gives NEMMCO the absolute right to impose terms and conditions. In exercising this right, it is expected that NEMMCO will act reasonably. The dispute resolution clauses apply to the extent permitted by Rule 8.2. However, Clause 8.2.1 specifically excludes the dispute resolution provisions from applying in relation to a decision by NEMMCO not to approve an application for classification as non-scheduled generating unit and a scheduled generating unit. The Commission in accordance with NEMMCO’s proposal has extended this exclusion to applications in relation to semi-scheduled generating units. The Commission considers consistency in application of the dispute resolution clauses to all classification applications is appropriate.</p> <p>Accordingly, the suggestion is not supported.</p>
2.2.3(b)(2)	<p>Vestas comments that the words “physical and technical attributes” can exclude a windfarm from central dispatch.</p>	<p>The Commission notes that this provision applies to a ‘non-scheduled generating unit’ rather than a ‘semi-scheduled generating unit’. Additionally the clause has not been amended in the proposed Rule change. As such, the Commission considers the comment to be out of scope of this proposal.</p>
2.2.3(c)	<p>Vestas comments that the words “in NEMMCO’s opinion” could require the less than 30 MW windfarm to be either a scheduled or Semi-Scheduled Generator.</p>	<p>This provision provides NEMMCO with discretion to apply some of the terms and conditions that are applicable to other categories of generating unit to a ‘non-scheduled generating unit’.</p> <p>It appears that this provision is reasonable, as it caters for any situation where the location of the generator introduces technical envelope restrictions that need to be adequately addressed.</p> <p>In this respect, the provision is required to ensure that NEMMCO can address its liability on power system security at any and all times.</p> <p>Accordingly, the Commission does not support this concern.</p>
2.2.3(g)	<p>Vestas suggests that this clause should be deleted.</p> <p>Vestas comments that Clause 3.8.2(e) obliges a windfarm operator below 30 MW [to participate] in the dispatch process.</p>	<p>The Commission considers Vestas’ comment is only correct if “NEMMCO considers it reasonably necessary for adequate system operation and the maintenance of power system security”.</p> <p>If the particular windfarm under consideration by NEMMCO was considered to provide a benefit from its participation in Central Dispatch (possibly because of binding network constraint events), then it would be appropriate for the windfarm to be caught by this provision.</p> <p>The provisions only apply to windfarms less than 30 MW if NEMMCO considers it ‘reasonably necessary</p>

		<p>for adequate system operation’.</p> <p>The condition to participate in Central Dispatch is not applied until NEMMCO exercises its right.</p> <p>As such, the Commission does not believe there is merit in adopting the Vestas suggestion.</p>
2.2.7		<p>This clause is an amended replication of NEMMCO’s Clause 2.2.2A.</p> <p>2.2.2A (g) and (h) of NEMMCO’s proposal are considered redundant clauses as these requirements are made elsewhere in Chapter 3. As such they have been deleted from the proposed Rule change. To be clear, this amendment in no way removes the obligation on Semi-Scheduled Generators to submit availability (for the UIGF) and dispatch offers.</p> <p>Paragraph (c) requires NEMMCO to be satisfied that the output of a generator is intermittent before approving its classification as an intermittent generator.</p> <p>As discussed in Section 4.1, paragraph (h) allows multiple physical generating units to be registered as a single semi-scheduled generating unit. NEMMCO does not have the discretion to reject an application to register multiple physical generating units as a single semi-scheduled generating unit if the conditions specified are met. However NEMMCO does have discretion to approve multiple physical generating units to be registered as a single semi-scheduled generating unit when those conditions are not met but NEMMCO is otherwise satisfied that Central Dispatch and system security would not be detrimentally impacted.</p> <p>Irrespective of paragraph (h), Semi-Scheduled Generators are still permitted to aggregate units under Clause 3.8.3.</p>
2.11.3(b)(8)	<p>Vestas seeks clarification on why the clause says “must only be recovered from”. Vestas suggests that this clause should be deleted.</p>	<p>NEMMCO has modified the current provision by the inclusion of the Semi-Scheduled Generator.</p> <p>The Commission considers that it is appropriate that all categories of Generator that are required to participate in Central Dispatch be included in making contributions to the Participant compensation fund. As semi-scheduled generating units will be included in Central Dispatch, they will be affected by errors in the NEMMCO dispatch process from time to time. Accordingly, it is right that this classification of generating unit contribute to this fund.</p> <p>The extent of contribution to the Participant Fund is subject to NEMMCO’s methodology. It is a function</p>

		of this methodology that impacts the contribution of intermittent generating units, not the Rules. As Semi-Scheduled Generators are only subject to dispatch errors during semi-dispatch intervals, the probability of a Semi-Scheduled Generator being incorrectly dispatched is much less than for a Scheduled Generator. The Commission considers that it would be appropriate for NEMMCO to take this into account when determining contributions to the participant compensation fund.
2.12	<p>Vestas seeks the following clarifications:</p> <p>(a) What is the purpose of the clause, given that the Rules have a Glossary of these terms.</p> <p>(b) How is a 'person' defined.</p> <p>Vestas suggests that this clause should be deleted.</p>	<p>The Commission considers that the inclusion in Rule 2.12 to be consistent with the purpose of that clause to other Generators. The Rule is relevant to other matters not addressed by this proposal and the Commission considers it to be out of scope of this proposal to consider deleting the Rule.</p>
3.7.1		<p>It is the UIGF that contributes to PASA for an intermittent generating unit rather than a direct contribution from each Semi-Scheduled Generator.</p> <p>On this basis, there should be no requirement placed on Semi-Scheduled Generators to provide information to PASA (as discussed in Section 4.2).</p> <p>Obligations on Semi-Scheduled Generators to provide input data to PASA have been removed from NEMMCO's proposed Rule changes. Although these obligations have been essentially replicated in Rule 3.7B (the Rule dealing with the UIGF) to require Semi-Scheduled Generators to provide availability data to NEMMCO for the UIGF in the dispatch, pre-dispatch and PASA timeframes.</p>
3.7.1(b)	<p>Vestas states that the words "up to two years in advance" could impose on windfarm operators [the obligation] to give information to NEMMCO for two years in advance.</p> <p>Vestas advises that this is an additional administrative cost to windfarm operators.</p>	<p>The Commission notes that this part of the current provision was not amended in the NEMMCO proposal.</p> <p>There appears to be no obvious reason why PASA related information should not be made available to the market in accordance with the PASA principles.</p> <p>On the other hand, the on-going availability of a windfarm is managed by the 'Unconstrained Intermittent Generation Forecast' (UIGF) that is prepared by NEMMCO.</p>

		<p>It is the UIGF that contributes to PASA for an intermittent generating unit rather than a direct contribution from each Semi-Scheduled Generator.</p> <p>The Commission does not consider the task of providing NEMMCO availability data two years in advance for the UIGF to be onerous. With the introduction of the notification threshold in Rule 3.7B, a Semi-Scheduled Generator would only be required to notify NEMMCO of a change in availability if a major outage is planned.</p> <p>Accordingly the Commission does not support Vestas' concern.</p>
3.7.1(c)(1)	Vestas states that “on a weekly basis” forces the windfarm operator to present the required data to NEMMCO on a weekly basis, but the data may only change every six months.	The Commission considers that Vestas' concern is addressed under Rule 3.7B by introducing a threshold before being required to notify NEMMCO of a change in availability.
3.7.1(d)	<p>Vestas states that the word “to undertake maintenance and outage planning” should embrace input from windfarm operators.</p> <p>Vestas comments that one or two units down for maintenance still leaves say another 30 or 40 units connected to the electricity grid.</p> <p>NEMMCO should not schedule maintenance of individual units.</p>	<p>The Commission understands that the provision places an obligation on NEMMCO to provide Generators, including Semi-Scheduled Generators, with “sufficient information” that allows the Generator to take maintenance and outage planning actions.</p> <p>In this regard, the provision does not provide an obligation on the Intermittent Generator.</p> <p>On this basis, it would appear that Vestas' comments are out of context with the meaning of the provision.</p>
3.7.2(a)	<p>Vestas asks the question “can windfarm operators forecast 24 months in advance?”, and notes that the information is to be provided weekly.</p> <p>Vestas suggests that special exemption should be given to windfarm operators, or alternatively, at least there ought to be a flexible tolerance on the data provided, and the tolerance must be</p>	<p>The Commission understands that the current provision places an obligation on NEMMCO to do certain things.</p> <p>In this regard, the provision does not provide an obligation on the Generator.</p> <p>On this basis, it would appear that the Vestas comments are out of context with the meaning of the provision.</p>

	stated in the clause.	
3.7.2(c)(4)		The Commission has removed this clause from NEMMCO’s proposed Rule because it has moved the requirement for NEMMCO to prepare the UIGF to Rule 3.7B.
3.7.2(f)(3)(iv)		The Commission has removed this clause from the proposed Rule because the weekly energy constraints in MT-PASA do not apply to current intermittent generation technologies.
3.7.2(g)	Vestas requests clarification of ‘on a cost recovery basis’. Vestas suggests that this documentation should be free to generators.	The Commission notes that NEMMCO published the procedure 432-0004 “Medium Term PASA Process Description” on its website, at no cost. In this regard, the current provision is a hang-over from the commencement of the NEM when it was unclear how NEMMCO would make available such documents.  However, the Commission considers that changing this clause is beyond the scope of this Rule change.
3.7.3		The Commission has amended this clause to be consistent with Clause 3.7.2.
3.7.3(f)	Vestas states that on one hand NEMMCO gives an exemption, and then due to ‘power system security’ removes the exemption. Vestas suggests that this clause should be deleted.	The current provision has not been amended in the NEMMCO proposal. The Commission considers that this is a reasonable provision in that it provides a general exemption subject only to NEMMCO exercising its responsibility for power system security.  Accordingly, the Commission does not support Vestas’ concern.
3.7B (new Rule)		The Commission added this Rule to place an obligation on NEMMCO to produce the UIGF, and an obligation on Semi-Scheduled Generators to provide to NEMMCO the information required for the UIGF. This matter is discussed further in Chapter 4.4.  This Rule also introduces a notification threshold so that Semi-Scheduled Generators are only required to notify NEMMCO of changes in availability when availability drops by more than 30 MW below their registered capacity. This matter is discussed further in Section 4.4.  The definition “available capacity” can be confusing for intermittent generators. The definition states the capacity must be available for dispatch. In the context of semi-scheduled generating units, “available capacity” is provided by the UIGF as this takes into account the expected input energy at the time of dispatch. The undefined term “availability” has been used to describe the maximum plant capacity available (i.e. not limited by energy source availability).

3.8.1(b)(12)	Auswind suggests that the proposed provision requires clarification.	<p>The Commission notes that the context of the proposed provision is part of a list of criteria that govern the Central Dispatch value maximisation objective function.</p> <p>Within this context, the proposed provision allows the Central Dispatch objective function to be limited by the “constraints” imposed by semi-scheduled generating units whose forecasts of generation represent unconstrained outputs.</p> <p>This type of limitation for semi-scheduled generating units represents the uncertainty associated with the fuel source, a problem that is otherwise captured by ‘availability’ constraints in subparagraph (2) for more predictable fuelled generating units.</p> <p>In this sense, subparagraph (12) is a drawing out of one of the specific conditions that would affect ‘availability’ of generating units. For wind turbines, the Commission considers that the detailed reference to this point is reasonable.</p> <p>Accordingly, the Commission supports the proposed provision. However the Commission has moved this provision to under subparagraph (2) to align the provision with the existing subparagraph (2) that deals with constraints due to availability. The UIGF provides a constraint on available capacity for semi-scheduled generating units.</p>
3.8.2(b)		NEMMCO’s proposal has not been accepted because self-dispatch levels are not relevant to current intermittent generation technologies. The self-dispatch level would simply be zero.
3.8.4		Semi-Scheduled Generators advise NEMMCO of their available capacity through the UIGF. Therefore, the Commission deleted obligations on semi-scheduled generating units from this clause.
3.8.6		<p>The Commission considers that self-dispatch level, ramp rate capability, loading and offloading prices are not relevant to current intermittent generation technologies and are not necessary to implement Semi-Dispatch. The self-dispatch level for an intermittent generator would simply be zero, and intermittent generators are generally capable of ramping their entire capacity within a dispatch interval, hence ramps rates are not limiting. The Commission has amended NEMMCO’s proposal to remove requirements in these areas.</p> <p>The parts of this clause that have been retained cover the structure of dispatch offers for Semi-Scheduled Generators, applies the market floor price and VoLL to Semi-Scheduled Generator offers, and defines the relationship between a semi-scheduled generating units price at the connection point and the regional</p>

		reference node.
3.8.17 and 3.8.18		<p>The Commission considers that self-commitment and self-decommitment Rules are unnecessary for current intermittent technologies (as discussed in Section 4.2). The Commission has amended NEMMCO’s proposal to remove requirements in these areas. The exception is 3.8.17(d) which provides a Semi-Scheduled Generator the right to synchronise.</p> <p>NEMMCO proposed new paragraph 3.8.18(b1). The Commission has accepted this addition to improve consistency with Clause 3.8.17.</p>
3.8.19	Auswind states that it is hard to imagine a windfarm fitting a fast profile.	<p>The output of intermittent generating units varies depending on their intermittent input energy. The Commission agrees that it is unlikely that an intermittent generator could follow a fast profile (as discussed further in Section 4.2).</p> <p>Therefore, the Commission has deleted semi-scheduled generating units from Clause 3.8.19 (Dispatch inflexibilities).</p>
3.8.20 (g)		This clause required Semi-Scheduled Generators to be capable of dispatching its plant as required under the pre-dispatch schedule. This is not possible for semi-scheduled generating units that rely on an intermittent input energy source. As such, Semi-Scheduled Generator has been removed from this clause.
3.8.21(d)	Auswind suggests rewording of this clause to incorporate situations where a Semi-Scheduled Generator does not have an AGC system or a ‘plant control’ room	<p>The Commission considers the definition of AGC to be quite broad (“The system into which the loading levels from economic dispatch will be entered for generating units operating on automatic generation control in accordance with Clause 3.8.21(d).”). The Commission considers that it is not unreasonable to expect semi-scheduled generating units to have some form of AGC to receive dispatch instructions, as required under S5.2.5.14 .</p> <p>Additionally, the Commission does not consider establishing a “plant control” room to be onerous either. The words “on or off-site” have been added to clarify the Commission’s view that Semi-Scheduled Generators are not required to establish control rooms on-site. The Commission considers that a control room could consist of a laptop computer in an office or home, or could be out-sourced.</p>
3.8.22		<p>The Commission’s decision in relation to re-bidding is discussed in Section 4.2.</p> <p>Re-bidding for Semi-Scheduled Generators is limited to available capacity and ancillary services provisions. This is a sub-set of the situations applying to Scheduled Generators and is therefore not</p>

		consistent with the structure of Scheduled Generators dispatch offers. This inconsistency has been accepted to keep arrangements for Semi-Scheduled Generators as simple as possible.
3.8.23(a) and (a1)	Auswind suggests that the paragraph requires correction to restrict compliance to the semi-dispatch interval.	The Commission has added paragraph (b) to the proposed Rule to outline under what conditions a semi-scheduled generating unit would be judged to have failed to conform to dispatch instructions. The Commission believe that in this new paragraph it is clear that a Semi-Scheduled Generator is only required to conform to a dispatch instruction during a semi-dispatch interval.
3.12A		Non-Scheduled Generators are currently not captured by Rule 3.12A (Mandatory restrictions), and NEMMCO has not provided justification for adding Semi-Scheduled Generators to Rule 3.12A. As such, in line with the Commission’s principle that new Rules are only added when it is demonstrated that they are needed to implement Semi-Dispatch, the proposed Rule has been amended to remove Semi-Scheduled Generators from Rule 3.12A.
3.13.4(p)	Auswind disagrees with the proposed provision on the basis that ramp rates for individual wind turbines are meaningless.	The Commission has amended the proposed Rule so that the ramp rates of Semi-Scheduled Generators are no longer required.
3.13.4(q)	<p>Auswind disagrees that the ‘unconstrained intermittent generation forecast’ should be published for all trading intervals.</p> <p>Auswind suggests that the ‘dispatch cap’ should be published, when a binding network constraint against a semi-scheduled generating unit has been forecast, in place of the UIGF.</p>	<p>The Commission notes that NEMMCO has addressed this matter in their supplementary submission (p3). NEMMCO advise:</p> <ul style="list-style-type: none"> <li>• That the UIGF is a fundamental component of the Semi-Dispatch proposal, as it aims to improve the accuracy of the central dispatch calculation at all times, not only during semi-dispatch intervals.</li> <li>• That all of the data, including the UIGF, should be published for all intervals for reasons of simplicity, market transparency, and consistency with the current next day reporting of unit data that has been presented to central dispatch.</li> </ul> <p>The Commission considers a fundamental principle of the NEM is the full publication of participant data as soon as possible after the instance of trading. It is noted that NEMMCO’s reasoning is consistent with this principle.</p> <p>The Commission considers the principle to make publicly available as much information as possible is good regulatory policy as it allows interested parties to perform independent assessments on the integrity</p>

		<p>of market operation.</p> <p>NEMMCO indicate that they would support an extension to the clause to include the additional reporting on whether a dispatch interval was a semi-dispatch interval or a non semi-dispatch interval.</p> <p>Accordingly, the Commission has added Clause 3.13.4(q)(2) to require NEMMCO to publish whether a dispatch interval is a semi-dispatch interval or not.</p>
3.14.6		<p>Non-Scheduled Generators are currently not captured by Rule 3.14.6 (Compensation due to the application of an administered price, VoLL, market floor price), and NEMMCO has not provided justification for adding Semi-Scheduled Generators to Rule 3.14.6. As such, in line with the Commission’s principle that new Rules are only added when it is demonstrated that they are needed to implement Semi-Dispatch, the proposed Rule has been amended to remove Semi-Scheduled Generators from Rule 3.14.6.</p>
3.15.6A(k)(5)		<p>The proposal requires causer pays factors to be based on deviations on a straight line trajectory to a semi-scheduled generating unit’s dispatch cap (for semi-dispatch intervals), and as such penalises Semi-Scheduled Generator’s for not reaching a dispatch cap. The Commission does not support this proposal because under Semi-Dispatch, semi-scheduled generating units are permitted to generate at any level below the cap and thus should not be penalised under causer pays for not reaching that cap. This matter is discussed further in Section 4.6.</p>
4.1.1(a)(3)(iv) and 4.3.1(i)	<p>Auswind agrees with the proposed provision on the basis that the definition of ‘dispatch’ remains consistent with the intention to control only active power during times of a network constraint in a semi-dispatch interval</p>	<p>It is the view of the Commission that, in accordance with Clause 3.8.23(a) and (a1), the term ‘dispatch’ refers to the control of active power during a semi-dispatch interval for semi-scheduled generating units.</p>
4.3.1(q)	<p>Vestas comments that ‘to interrupt’ in the clause is costly to windfarm operators.</p> <p>Vestas suggests that NEMMCO should compensate for lost revenue due to ‘interrupt’.</p>	<p>It is noted that the current provision is not altered by the NEMMCO provision.</p> <p>The current provision is a responsibility placed on NEMMCO to act in a certain way to restore the power system to a satisfactory operating state. It is most unlikely that the interruption would be to a semi-scheduled generating unit.</p> <p>However, an interruption to a windfarm could be envisaged if the windfarm was operating into an islanded system and there was a problem in synchronising the windfarm with the islanded system.</p>

		<p>The Commission considers that Vestas' comment is out of context with the intent of the provision.</p> <p>Therefore, Vestas' comment is not supported by the Commission.</p>
4.4.2(a)	<p>Auswind disagrees with the proposed provision on the basis that Clause 4.9 contains wording that is inconsistent with the definition of a semi-scheduled generating unit.</p>	<p>The Commission notes that NEMMCO must be able to send dispatch instructions to <u>all</u> generating units that are included in central dispatch.</p> <p>In particular, all semi-scheduled generating units must respond to dispatch instructions when the dispatch interval is classified as a semi-dispatch interval and the generating system output is above the dispatch cap.</p> <p>Accordingly, the Commission does not support Auswind's position.</p>
4.4.2(b)	<p>Auswind disagrees with the proposed provision on the basis that the term 'governor system' no longer exists in Schedule 5.2.</p> <p>Auswind suggests that the intent of the provision is to refer to the unit's performance standard rather than the governor system.</p> <p>Vestas comments that the clause is not applicable to a windfarm comprising asynchronous machines because an asynchronous machine has no governor.</p>	<p>The Commission supports the comments made in submissions.</p> <p>The Commission has amended this clause to require generating units to have a frequency response in accordance with Schedule 5.2.5.11. This schedule places appropriate frequency response obligations on each classification of generating unit. This has allowed reference to 'governor system' to be removed from Clause 4.4.2(b).</p>
4.8.5A(c)	<p>Vestas comments that a windfarm operator typically does not operate a manned 24 hour control room.</p>	<p>The Commission notes that the current clause, as it reads, does not specify that an on-site control room must be provided by the Generator.</p> <p>However, the Commission considers a person not familiar with the Rules could easily arrive at the position that an on-site presence was necessary in order to satisfy a requirement by NEMMCO for an 'immediate' response to its enquiry.</p> <p>In the case of a windfarm, the Commission notes that this provision would only be activated if a problem occurred that was outside the information normally received by NEMMCO when determining its UIGF and monitoring roles.</p>

		<p>The Commission considers it sufficient for the Generator to provide an ‘on-call’ person who can be contacted by electronic means and who has access to plant related information from remote acquisition facilities.</p> <p>The Commission does not consider the clause requires a Semi-Scheduled Generator to operate a manned 24-hour control room.</p>
4.9.2(d)	<p>Auswind disagrees with the proposed provision on the basis that it infers that each windfarm has a 24x7 control room, which is not always the case.</p> <p>Vestas states that the words ‘at all times’ do not consider that windfarm operators typically do not operate 24 hour manned control centres.</p> <p>Vestas comments that may be consideration should be given to an automated process.</p>	<p>The Commission notes that no change has been made to the current provision to “infer that each windfarm has a 24x7 control room”.</p> <p>On the contrary, the current provision, which is satisfactory for the operation of all intermittent generators, requires only that a person be ‘available at all times to receive’ (that is, on call and accessible by phone) and ‘immediately act upon that dispatch instruction’ (that is, to have either local and/or remote electronic access to the units control panels).</p> <p>Both Auswind and Vestas do not explain why this current arrangement can not be applied to wind turbines.</p> <p>While it considers that the current provision is adequate for all types of intermittent generators, the Commission has decided to remove any doubt through the addition of the words ‘or systems’ after the phrase ‘ensure that appropriate personnel’.</p>
4.9.2(e) – new provision	<p>Auswind states that the proposed provision [the requirement for 24 hour personnel to be available implied by paragraph (d)] places an onerous and costly obligation on Semi-Scheduled Generators.</p> <p>Auswind suggests that to avoid the potential costs, it should be made clear that there is no requirement for 24 hour personnel availability if a Semi-Scheduled Generator is able to automatically respond to an electronic dispatch instruction issued by NEMMCO.</p>	<p>NEMMCO explicitly addresses the requirement for a Semi-Scheduled Generator to install additional capital works and to incur both upfront and on-going operating and maintenance expenditure in making facilities available on a 24 x 7 basis. [Section 8 “Impact on Windfarm Development and Operating Costs”, page 73]</p> <p>However, there is no explicit reference to the need to have a control room that is manned 24x7.</p> <p>The Commission considers that Auswind’s interpretation of the proposed provision is incorrect. The provision requires the Generator to “...ensure that appropriate personnel are available at all times to receive and immediately act on dispatch instructions...”, where dispatch instructions may be issued either electronically or verbally by NEMMCO.</p> <p>However, the provision is silent on the location of the personnel. For example, it could be that a person is “on-call” at a location remote to the generating unit. In such a situation, the person might receive the</p>

		<p>instruction from the NEMMCO System Operator and remotely access the generating unit’s control system to effect the direction specified by NEMMCO.</p> <p>Such an arrangement would not be considered onerous or costly as it is normal practice for such a Generator to have someone on-call to deal with any operational issues that unexpectedly arise.</p> <p>In particular, there is no requirement for the generator to have personnel at the site of the generating units on a 24 x 7 hour basis.</p> <p>Accordingly, the Commission does not support Auswind’s suggestion to introduce the new provision.</p>
4.9.2A and 4.9.3	Auswind states that the changes to these clauses are outside the scope of this set of Rule changes.	<p>The NEMMCO “Request for Rule Change” makes the following statements as to the scope of the proposed changes:</p> <p>Page 5: The purpose ...is to seek changes to the NER to ensure that NEMMCO can continue to effectively control network flows within secure operating limits where significant amounts of generation of an intermittent nature ...are likely to emerge in the NEM.</p> <p>This statement indicates that the Rule changes would extend beyond the actual intermittent generator to other entities, where there was an impact on those entities.</p> <p>It is also noted that the changes presented in Clause 4.9.2A are of an editorial nature, and their correction is part of the on-going improvement in the presentation of the Rules.</p> <p>Therefore, the Commission does not support Auswind’s view.</p>
4.9.4(a)		The Commission has amended the proposed Rule so that references to self-commitment and frequency response mode apply to Scheduled Generators only. The Commission considers that self-commitment and frequency response mode is not relevant to Semi-Scheduled Generators.
4.9.4(b)	Auswind disagrees with the proposed provision on the basis that adjusting the transformer tap position or excitation control system voltage set-point must be left to the domain of a Scheduled Generator.	<p>The Commission has considered two points:</p> <ul style="list-style-type: none"> <li>• First, the Commission considers that NEMMCO has not explained the requirement to control the tap changer or excitation control system voltage set-point of a semi-scheduled generating unit. On its own this would raise a policy issue as to whether it is appropriate for NEMMCO to impose</li> </ul>

	<ul style="list-style-type: none"> <li>• Auswind states this provision was not discussed in the reference group meetings.</li> <li>• Auswind states that there are no excitation control systems on wind turbines.</li> <li>• Auswind implies in its comments that the tap changers do not have remote operation and consequently a 24 x 7 hour control room would be necessary to fulfil this requirement.</li> <li>• Auswind suggests that the proposed reference to semi-scheduled generating unit be removed, such that the current provision is retained, which refers to Scheduled Generators only.</li> </ul> <p>Vestas states that before the connection point there may be a substation and the substation may have a transformer with a tap changer. Under this situation:</p> <ul style="list-style-type: none"> <li>• NEMMCO should not want to control the nominal voltage of this transformer.</li> <li>• Induction machines with power conditioners cannot tolerate voltages other than nominal voltage.</li> </ul> <p>A wind turbine unit may disconnect from the electricity grid when the voltage is not within specification.</p>	<p>this requirement on a Semi-Scheduled Generator within these proposed changes.</p> <ul style="list-style-type: none"> <li>• Second, the question as to whether there is a benefit of such a facility. If the tap changer is installed to control the low voltage bus voltage, so as to keep the generating system at a constant voltage, the Commission considers that it cannot then be used to provide voltage support to the distribution or transmission network.</li> </ul> <p>Therefore, the Commission agrees with Vestas and Auswind’s argument, and has deleted semi-scheduled generating unit from this clause of the proposed Rule.</p>
4.9.4(e)	Auswind disagrees with the proposed provision	NEMMCO has not explained the requirement for a semi-scheduled generating unit to have a ‘frequency

	<p>on the basis that it is over and above that agreed in the performance standards.</p> <p>Auswind points out that:</p> <ul style="list-style-type: none"> <li>• Wind turbines by definition do not have a ‘frequency response mode’, rather they simply follow the system frequency.</li> <li>• The provision infers a control function that does not exist.</li> </ul> <p>Vestas makes the following comments:</p> <ul style="list-style-type: none"> <li>• Induction machines do not offer frequency control.</li> <li>• Wind turbine units with induction generators may change frequency at will.</li> </ul> <p>NEMMCO approval should not be required.</p>	<p>response mode’ facility.</p> <p>For the reasons outlined above in 4.9.4(b), the Commission agrees with Vestas and Auswind’s argument, and has deleted semi-scheduled generating unit from this clause of the proposed Rule.</p>
4.9.5(a)	<p>Auswind disagrees with the proposed provision on the basis that paragraph (a)(2) refers to reactive power, transformer tap or other outcome.</p>	<p>The Commission agrees with Auswind’s position, and has amended the Rule to include “if applicable” to (a)(2) to remove doubt.</p>
4.9.6	<p>Vestas states that a wind turbine unit may synchronise and de-synchronise many times (according to the supply of energy).</p> <p>Vestas comments that:</p> <ul style="list-style-type: none"> <li>• A windfarm operator should not need to</li> </ul>	<p>As discussed in Section 4.2, the Commission agrees with Vestas and Auswind’s arguments in relation to commitment procedures, and as such has removed “Semi-Scheduled Generator” from this clause (Commitment of scheduled generating units and semi-scheduled generating units) of the proposed Rule.</p>

	<p>contact NEMMCO.</p> <ul style="list-style-type: none"> <li>• A windfarm operator typically does not have a 24 hour manned control centre.</li> </ul> <p>Clause 4.9.6(a)(2):</p> <p>Auswind disagrees with the proposed provision and states that.</p> <ul style="list-style-type: none"> <li>• The proposed provision is pointless and undermines the whole point of this set of the Rule changes.</li> <li>• The intention of this set of Rule changes is to allow semi-scheduled generating units to produce power freely unless the semi-dispatch interval flag is set.</li> <li>• The clause is unnecessary as all semi-scheduled generation will be operated at whatever level is possible given the wind conditions. That level will be equal to or less than the capacity of the semi-scheduled generating unit, unless the interval is a semi-dispatch interval.</li> </ul> <p>Auswind suggests that the reference to semi-scheduled generating unit be deleted.</p>	
4.9.7		As discussed in Section 4.2, the Commission has removed “Semi-Scheduled Generator” from this clause (De-commitment of Scheduled Generators and Semi-Scheduled Generators) of the proposed Rule.
S.5.2.5.14(a) (2) and (3)	Auswind disagrees with the proposed provision on the basis that the Automatic access standard for non-scheduled generating systems is being	The Commission notes that the NEMMCO proposal explains the formation of the automatic access standard, which is the minimum access standard plus a requirement for linear ramping similar to that for

	<p>changed from that agreed in the previous change to the Rules.</p> <p>Auswind suggests that the requirement on semi-scheduled generating units be made identical to non-scheduled generating units.</p>	<p>scheduled generating units.</p> <p>NEMMCO have not explained how a windfarm would be able to meet a ‘linear ramping’ requirement.</p> <p>Auswind states that there is no justification for lifting this standard and requiring the ‘linear ramping’, which is dealt with through the causer pays process.</p> <p>The proposed requirement to meet ‘linear ramping’ is in excess of requirements on Non-Scheduled Generators, and in the absence of justification for this additional requirement, the Commission has amended the proposed Rule to remove this requirement.</p>
S5.2.5.14(b) (3)	<p>Auswind states that the ‘constant rate’ should not be mandated, as there is no system security justification as the change required by a dispatch instruction should not be so large as to impact on the system security itself.</p> <p>Vestas states:</p> <ul style="list-style-type: none"> <li>• A wind turbine unit cannot increase active power output.</li> </ul> <p>Wind turbine units can reduce active power output but not at a constant rate (it may be a curve).</p>	<p>The requirement in this clause to reduce active power at a ‘constant rate’ is more stringent than the requirement for Non-Scheduled Generators.</p> <p>Whilst the Commission understands it is desirable for active power to be changed at a constant rate (hence its inclusion in the automatic access standard), the Commission does not believe this requirement is necessary to manage system security. As some intermittent generators are not capable of changing active power at a constant rate, inclusion of this requirement in minimum standards could be viewed as a barrier to entry.</p> <p>The Commission considers that NEMMCO has not justified this additional requirement. As such, the proposed Rule has been amended to remove the requirement to reduce active power at a ‘constant rate’ from the minimum access standards.</p>
S5.2.5.14(b) (3)(I)	<p>Auswind states that the concept of ‘automatically’ increasing generating is contradictory to intermittent generation.</p>	<p>Whilst it is attractive to include the ability for any generating system to automatically increase its output, in the case of a semi-scheduled generating system, the Commission considers that such a facility appears to be of no practical use.</p> <p>This is because the generating system can operate to any level below its dispatch cap at any time, and it is only in the situation that the output is above the dispatch cap and the period is declared a semi-dispatch interval that conformance with a dispatch instruction is required.</p> <p>In this situation, the Generator must act to reduce its output, not increase its output.</p>

		On this basis, the point made by Auswind appears to be reasonable and the Commission has removed the phrase ‘or increasing’ from the provision.
Glossary - “dispatch cap”	<p>Auswind disagrees with the proposed definition.</p> <p>Auswind suggests that maximum permissible generation is only capped during a semi-dispatch interval. The maximum permissible generation is otherwise the available capacity.</p>	<p>The NEMMCO proposal provides limited explanation of the dispatch cap, which can be summarised as:</p> <ul style="list-style-type: none"> <li>• The dispatch cap represents a maximum generation limit (Section 3.2.1, p31).</li> <li>• The generating unit need only comply with a dispatch instruction when the unit is subject to a ‘Semi-Dispatch compliance requirement (Section 3.2.1, p31).</li> <li>• A semi-scheduled generating unit would only need to comply with its dispatch cap when the Semi-Dispatch compliance requirement is also set (Section 3.5.1, p43).</li> <li>• For all semi-dispatch intervals, a unit would be required to limit its output at the end of that dispatch interval to less than or equal to the value of its dispatch cap (Section 3.6.1, p46).</li> <li>• For all other non-semi-dispatch intervals a unit would not be required to comply with its dispatch cap for that dispatch interval, can ignore the dispatch cap and operate at any generating output level over that dispatch interval (Section 3.6.1, p46).</li> </ul> <p>The amendment suggested by Auswind (to restrict the definition to a semi-dispatch period) does not appear to be consistent with the NEMMCO proposal in that a dispatch cap is published for all dispatch intervals. It is only when a ‘Semi-Dispatch compliance’ flag is also set that a unit is required to comply with the dispatch cap.</p> <p>On this basis, the dispatch cap is not limited to the semi-dispatch interval as indicated by Auswind. Accordingly, the suggestion is not supported.</p>
Glossary - “generating system”	<p>Auswind comments that this clause requires a lead clarification statement to clarify the difference applications of a ‘generating system’ in Chapter 3 and Chapter 5.</p> <p>Auswind states that a generating system in the technical standards refers to a collection of</p>	<p>The National Electricity Amendment (Technical Standards for Wind and other Generator Connections) Rule 2007 of 8 March 2007 amended the definition of generating system to include auxiliary or reactive plant necessary for the generating system to meet its performance standards. The definition as it stands applies to all chapters of the Rules, however the inclusion of auxiliary or reactive plant is only required for Chapter 5 and Clause 2.2.1(e)(3).</p> <p>To clarify this distinction, the Commission has amended the definition so that the expanded definition</p>

	generating units, however the market use in Chapter 3 creates a situation where the semi-scheduled generating unit in Chapter 3 is in fact the equivalent of the generating system in the technical standards.	(which includes auxiliary and reactive plant) only applies to Chapter 5 and Clause 2.2.1(e)(3).
S11.11.4	<p>Vestas comments that there should be a special fee structure for windfarm operators.</p> <ul style="list-style-type: none"> <li>• Vestas states that the costs of a conventional synchronous machine are not the same as those of a windfarm.</li> <li>• These fees should be greatly reduced in comparison to synchronous machines.</li> </ul>	<p>The NEMMCO proposal explains the allocation of participant fees to a Semi-Scheduled Generator in Section 3.8.1 (page 56).</p> <p>NEMMCO states that the activities NEMMCO would engage in for the proposed category of Semi-Scheduled Generator is largely similar to those in respect of Scheduled Generators.</p> <p>On this basis, NEMMCO has proposed that Semi-Scheduled Generators are treated as Scheduled Generators for the purposes of allocating fees to Semi-Scheduled Generators.</p> <p>NEMMCO also states that the waive of fees for reclassification of up to 2 years should be approved on the basis that it will encourage persons to apply for re-classification.</p> <p>This Commission supports this arrangement as it may encourage Non-Scheduled Generators to re-classify their units as Semi-scheduled Generating Units, which the Commission considers would improve NEMMCO's ability to manage system security.</p>
Various Rule and clauses		The Commission has made a number of editorial and minor drafting amendments in the draft Rule that have been identified in the analysis on this proposal.