10 July 2007

Dr John Tamblyn
Chairman
Australian Energy Market Commission
PO Box H166
Australia Square
NSW 1215

Dear John,

Re: National Electricity Rules - Request for Rule:
Semi-Dispatch of Significant Intermittent Generation

The Australian Wind Energy Association (Auswind) represents 85 members whose interests include all major wind turbine manufacturers, wind farm owners and developers. The installed wind energy capacity in Australia represents $1.9 billion of capital expenditure, which to date is probably the most significant investment in greenhouse gas abatement. There is potential for an additional $14 billion of new investment when the appropriate policies and programs are in place. As the Australian economy seeks to reduce its carbon intensity, managing for the growth in emission free electricity, much of which will be intermittent generation, is a necessity.

Uncertainty surrounding the economic policy drivers, technical requirements, market dispatch and other power system security obligations has led to a slow down in the rate of wind generation projects being committed. Despite significant effort by Auswind members, the current NEM connected wind generation capacity is less than 700MW.

Regardless of technology type, Australia is a small market in a global sense. We do not, therefore, drive the development of specific control methods for generators, and the designers of the NEM Rules need to be conscious of this. Auswind therefore considers that this rule change must progress with common sense, taking into account the practicalities and natural limitations of renewable intermittent generation while satisfying jurisdictional regulators that NEMMCO has what it needs to manage network congestion. Development work will be required in order to achieve integration between the NEM dispatch instructions and the existing wind farm regulation control systems. Allowance should be made for this development in the transitional arrangements.

Wind farms are increasing in size. At the same time manufacturers are developing more sophisticated control functions allowing these wind farms to be operated remotely. This mode of operation is efficient and, with internet oversight, sometimes operational control is provided from outside of the country where the wind farm is located. It does represent a modern model of operational control which is unlike conventional generation.

In the interest of the integration of wind energy and power system security, Auswind supports the majority of this rule change. This method provides NEMMCO with the level of control necessary to alleviate the transmission congestion in accordance with transmission network constraints implemented in the NEM Dispatch Engine.

We have documented in detail where we agree and disagree with the rules in the table in Attachment 2. Where we have not agreed with the proposed Rule, we have provided a reasonable alternative that is still in line with the intent of the rule change and suitable for the technology available. What constitutes a 'semi-scheduled generating unit' requires clarification.

The purpose of the rule changes, as specified by NEMMCO, is "to ensure that NEMMCO can continue to efficiently control network flows within secure operating limits where significant amounts of generation of an intermittent nature (such as wind farms) are likely to emerge in the NEM." It should be noted that the vast majority of the 6000 plus network constraint equations relate to networks of 100kV and above. The WETAG, the WEIRG and the TSRWG all worked on the principal that NEMMCO required the ability to limit the active power output via the constraints only when there was a binding network constraint, which would only normally occur in these higher voltage transmission networks.

Discussion in those forums had mooted that the dispatch requirement could be on an as needs basis, that this should be assessed during the connection stage and identified as a requirement. This rule change goes beyond such discussions and mandates the inclusion of all wind farms of 30MW or more into the semi-scheduling regardless of their position in the network. To an extent this provides certainty for investment, while still increasing the cost of connection in places without reason which is contrary to the NEM objective.

Where the rules have gone beyond this agreed intention, we have highlighted our concerns and requested that it be returned to the agreed intention.

This submission has been prepared under the management of Kate Summers, Technical Director for Auswind and Chair Auswind Industry Regulation NEM committee. Please contact Kate for further information on (03) 9615 6442 ksummers@pacifichydro.com

Yours sincerely

Dominique La Fontaine
Chief Executive Officer
Auswind

Enclosures: Attachments 1, 2 and 3.

ATTACHMENT 1 – COMMENTS

Registration Requirement – 'Semi-scheduled generating unit' what is it?

The current registration requirement is based on registering each individual generating unit with NEMMCO. This rule was made prior to wind turbines being connected to the system and certainly before large wind farms were even considered. This current set of rule changes comes about specifically to incorporate large wind farms into the dispatch system in order that the system operator can manage power flows on the network.

This proposed set of rules do not make it clear that in order to manage semi-scheduling of a wind farm NEMMCO must have the registration applicant apply to aggregate their generating units during registration as a 'semi-scheduled generating unit'. It would be nonsensical and technically very difficult to dispatch at the generating unit level. The control of active power output will be made up through a combination of taking units off and ramping other units to meet a power limit. Defining the individual unit as being a 'semi-scheduled generating unit' when the response is derived from the wind farm, is illogical.

This set of rules calls for aggregation but it has not been stated in the Registration clauses. Aggregation must at least be referenced in 2.2.2A (as it is expected), or the aggregation rules elevated to Chapter 2. We have provided a rule change suggestion which is only one possible suggestion to correct this issue.

The incorporation of a wind farm into the dispatch should be done on an efficient and cost effective basis, the rule change should not impose unnecessary costly administrative burdens on the participant.

The definition as proposed creates a significant inefficiency. Throughout the wind technical standards rule change it has been made very clear in its references to a 'generating unit' and references to a 'generating system'. Technical standards and connection agreements are designed for a group of units at a single connection point. Auswind members would prefer to be able to register a generating system as wind farms have one connection point and are made of the same small 'generating units'.

It is intended that all bid and offer data will be done on the generating system. It would also be in NEMMCO's interest to manage the market data systems through a single clustered entity. Annual data updates would be simplified. These issues need to be addressed perhaps procedurally as we believe that provision of information, modelling and the testing of identical units should also be addressed.

It should be in both the registration and connection Rules that where all units in a group of identical units (represented through the same electrical model), then all that should be submitted to NEMMCO and the NSP would be:

- the indicative model for one unit,
- the number of units; and
- the relevant connecting plant

Our rule suggestion on *identical generating units* goes some way towards suggesting this.

Our suggestion requires a radical change to the registration clauses to make it possible to register a generating system instead of each generating unit. Our suggestion is to capture small identical generating units (< =5 MW and of the same manufacturer model type) within a generating system.

Definition of semi-schedule generating unit.

It is evident, that the definitions of semi-scheduled generating unit and semi-scheduled generating system require clarification. The rules need to be applied at a 'whole of farm level' there are numerous clauses where the definition conflicts with the use of 'generating unit' or the use of aggregation. We applied a consistent approach treating a 'semi-scheduled generating unit as if it is the wind farm and not a single unit throughout our amendments in an effort to correct the confusion. However, if aggregation is clarified or the registration requirement altered, then in some places our proposals may not be required.

These rules changes have created a new meaning for the use of generating system, which is not the same as that which was widely adopted in the technical standards rule change.

In practice, with the appropriate interpretation, the clauses can work but we suggest that NEMMCO be directed to undertake a review of the terms to ensure consistency between clauses of the rules and clearer understanding of intent.

Technology conflict

In a number of areas the drafting appears to have simply taken an obligation for scheduled generating units and applied it to semi-scheduled generating units. While this works in some places, it does not work where the original rule was drafted around the operational control and performance of large thermal units. This is particularly evident in the drafting of Schedule 3.1 data provision. A specific example is the proposed Minimum standard in S5.2.5.14 for a semi-scheduled unit, which has become a replication of the Automatic standard for a scheduled generating unit with one line removed, making it clearly exceed the minimum standard for scheduled generating units in the same clause.

This is of significant concern since the AEMC has only recently made the Wind Technical Standards Rule and no discussion was held on changing the technical standards for connection (again) in this Rule change. Those drafting the minimum standards in these changes have not held to the principle of "do no harm" by lifting the standard beyond the control of many wind turbines.

These changes represent significant barriers to the connection of wind power, without, as far we can see, a thorough investigation of the requirement for setting the bar so high..

30 MW requirement

At a fundamental level we strongly believe that the use of the 30 MW generation limit as a trigger for this requirement will cause a significant barrier to smaller wind projects that are connecting to voltages less than 100kV. A 30 MW wind farm will average around one third of its nameplate rating in output. It would be more logical to consider that generation projects connected to voltages above 100kV be treated as being required to conform to this rule.

The reason behind this measure is that small projects are unlikely to afford the cost of connection to the higher voltages – hence larger generation projects connect to voltages of 100kV and above. This also represents the transmission 'backbone' that falls within NEMMCO oversight. The transmission congestion and hence the transmission constraints which are the very reason for this rule change, occur in these voltages. There are a few exceptions in the low voltages and where those exceptions occur, NEMMCO and the NSP should highlight this during a connection process and ensure that the project is required to be semi-scheduled.

Furthermore, there are no system standards for the clearance of protection in S5.1a.8 for voltages less than 100kV and as a result there are varying levels of pre-existing communications available in these areas of the network. Such small projects cannot carry the overheads contemplated by these rules unless they are part of a much larger portfolio with pre-existing market systems. This favours existing participants and does not encourage new entrants.

In proposing this Auswind recognises that it is a significant request, however we feel strongly that this rule change was only ever intended to capture the need to control power flows on the transmission network. Small projects in the lower voltages are offsetting local load – if they go beyond this they incur a penalty by reversing the loss factor and decreasing their network benefits. Due to economies of scale (in construction) small projects are less viable and more marginal, they are also more likely to be able to carry the cost of the low voltage connection, and are therefore are unlikely to connect to the transmission backbone.

We also recognise that NEMMCO would and should have the power to require the generation that in a non-scheduled category, to provide all the remote monitoring, wind data, units status etc, for the purposes of improving the wind forecasting and system modelling.

There are 28 references to 30MW in the NEMMCO request for rule change we have only altered 2.2.2A (a) and (c) for your consideration. We urge that this be looked at from an economic assessment of wind projects and where they are being connected.
Proportionally the costs of the systems, personnel and other overheads to these small projects is likely to ensure that we fail to meet the jurisdictional renewable energy targets. Without assessing this impact it is also hard to cost the loss of competition in the market that this causes as it is a significant barrier to new entrants and distributed generation.

Offer Profiles
One of the current flaws in the dispatch model lies in the two profiles described by clauses 3.8.17, 3.8.18 and 3.8.19. These rules relating to commitment, decommittment, self dispatch levels, inflexibility profiles are confusing particularly when applied to wind farms. There are few units that can conform to the structure easily and most have to deny their fast start capability in order to be able to control their return to service.

These rules are not consistent with the actual operation of most plant and we request that NEMMCO be directed to undertake a review of the terms with the aim of clearing up and recognising a wider range of technologies, their operating limitations and general start up requirements.

Wind Forecasting
A fundamental requirement underlying these Rules is the accuracy of the unconstrained intermittent generation forecast. Auswind believes that AWEFS will need to be installed and tuned to provide an acceptable level of accuracy in order for this proposal to work.

Compensation
Where compensation is payable we note that NEMMCO have considered it reasonable to include the semi-scheduled generating units into the relevant clauses. However we note that in clause 3.15.7B the types of costs (externalities) that are incorporated in the aggregate loss of revenue need to be adjusted to incorporate the renewable energy benefit. We request the insertion of 3.15.7B (a3A) and the appropriate definition of the renewable energy benefit.

Final Comments
We have carefully considered the implications of these changes. The proposal to provide a method to manage the transmission congestion and avoid violation of network constraints arose early in the WETAG meetings. The wind industry recognises that a management method for the active power in the transmission network under NEMMCO's oversight is necessary. To this extent the rule change should focus on, where constraints are caused, who contributes to those constraints, and how the constraint can be relieved. The broad bush rule based on capacity captures projects that are connecting to areas of the low voltage network that do not have flows managed through the central dispatch, which is inappropriate.

It should be noted that at this stage there are several major renewable energy companies who will need to develop the market bidding and trading systems, the remote generation dispatch control systems and NEMMCO interfaces, and other communication links associated with this process. These systems and interfaces will increase the cost of wind generation projects. We note that NEMMCO has not commented on the cost of personnel and associated skill sets and the preparation required to incorporate the systems inferred in this set of rules, and they should be required to do so.

At this stage the manufacturers have indicated that they are not willing to produce a specialised interface to meet specific NEM requirements. Consequently, to a large extent, the Australian wind industry will have to develop a generic method of integrating the NEM dispatch signal to the various wind farm power regulating modules of the manufacturers. No cost is yet available for that.

ATTACHMENT 2 : Auswind submission to AEMC on Semi-scheduled rule change

Clause – from NEMMCO –(not all change marking is in place due to formats not copying out of PDF.)	**Agree/Disagree / Comment**	**Proposed Alteration**
2.2.1 (e) (1) To be eligible for registration as a *Generator,* a person must: (1) obtain the approval of *NEMMCO* to classify each of the *generating units* that form part of the *generating system* that the person owns, operates or controls, or from which it otherwise sources electricity, as either a *scheduled generating unit*, a *semi-scheduled generating unit* or a *non-scheduled generating unit*; (2) classify the *generating units* in accordance with *NEMMCO's* approval as referred to in subparagraph (1); and	Disagree: the problem of the definition that requires aggregation starts here. A scheduled unit or semi-scheduled unit in practise is a single entity on which an offer must be submitted into NEMDE. **"generating system** A system comprising **one or more** *generating units* and includes auxiliary or *reactive plant* that is located on the *Generator's* side of the *connection point* and is necessary for the *generating system* to meet its *performance standards*." (Where participants have identical units that are larger than this – NEMMCO will still want to receive electrical data on the individual machines as they are unlikely to have the same parameters. The variance in small machines is small enough to ignore (in impedance terms). However for the purposes of the market data we are searching for a way to simplify the registration and administrative overhead associated with large numbers of wind turbines requiring annual dispatch data updates)	2.2.1 (e) (1) (e) To be eligible for registration as a *Generator,* a person must: (1) obtain the approval of *NEMMCO* to classify each of the *non-identical generating units* that form part of the *generating system,* or a *generating system of identical generating units* that the person owns, operates or controls, or from which it otherwise sources electricity, as either a *scheduled generating unit*, a *semi-scheduled generating unit* or a *non-scheduled generating unit*; (2) classify the *generating ~~units~~ system* in accordance with *NEMMCO's* approval as referred to in subparagraph (1); and **Requires defining:** ***generating system of identical generating units*** A system comprising one or more *identical generating units* and includes auxiliary or *reactive plant* that is located on the *Generator's* side of the *connection point* and is necessary for the *generating system* to meet its *performance standards*." ***identical generating units*** Multiple *generating units* each of the same manufactured model number, the same nameplate rating and where the electrical performance can be assessed through the same dynamic model. The *nameplate rating* on each *generating unit* must be less than or equal to 5MW.

		non-identical generating units *generating units* with different *nameplate ratings* or the electrical parameters of the individual *generating unit* are unique.
(f) Except in relation to a proposed *generating unit or* a person must also classify each of those *generating units* as either a *market generating unit* or a *nonmarket generating unit.*	Request alteration to align the registration of a wind farm with many identical small turbines each of the same electrical model.	(f) Except in relation to a proposed *generating unit* or a proposed *generating system of identical generating units*, a person must also classify each of those *generating units* or each *generating system of identical generating units* as either a *market generating unit* or a *nonmarket generating unit.*
2.2.2	Agree - but clause (a) could be re-drafted to provide scheduled units access to the concept of identical units as proposed in 2.2.1 and 2.2.2A. This is intended to simplify registration and administrative overheads.	
2.2.2 A(a) Unless *NEMMCO* approves its classification as a *scheduled generating unit* or as a *non-scheduled generating unit*, a *generating unit* which has a *nameplate rating* of 30 MW or greater or is part of a group of *generating units connected* at a common *connection point* with a combined *nameplate rating* of 30 MW or greater may only be classified as a *semi-scheduled generating unit*.	Concerned with definition: Drafting throughout Chapter 3 is in conflict with recent redrafting of chapter 5. Definitions are ill defined. A 'group of *generating units*' becomes a single semi-scheduled generating unit, however in later clauses – S5.2.5.14 there is a reference to *semi-scheduled generating systems*. Under the technical standards a generating system is clearly the collective of generating units behind a connection point. This Rule change now infers that a generating system is a collective of wind farms aggregated under clause 3.8.3. NEMMCO's flow charts in the Request is not in line with the classification intention nor the	2.2.2 A(a) Unless *NEMMCO* approves its classification as a *scheduled generating unit* or as a *non-scheduled generating unit*, a *generating unit* which has a *nameplate rating* of 30 MW or greater or is a ~~part of~~ a ~~group of~~ *generating system of identical generating units connected* at a common *connection point* with a combined *nameplate rating* of 30 MW or greater and has a *connection point voltage* of 100kV or more may only be classified as a *semi-scheduled generating unit*. 2.2.2A (a1) To remove doubt, a group of *identical generating units* each with a *nameplate rating* less than or equal to 5 MW that have a common *connection point* and under 2.2.2A(a) and can be classified as a *semi-scheduled generating unit* need not apply for aggregation under clause 3.8.3, but must still submit to NEMMCO the data

	wording in their justification. It should be clear that less than 30 MW is not required to be semi-scheduled, regardless of whether you are intermittent or not. NEMMCO still have powers to request conditions on non-scheduled, there is no market benefit nor efficiency in this. It is effectively increasing costs on small renewable projects.	required in Schedule 3.1 for a single physical *generating unit* and the number of *generating units* that data is to apply to. (a2) Where *non-identical generating units* are *connected* behind a common *connection point* aggregation under clause 3.8.3 may be applied for.
(b) A person must not classify a *generating unit* as a *semi-scheduled generating unit* unless it has obtained the approval of *NEMMCO* to do so. *NEMMCO* must approve the classification if it is satisfied that the output of the *generating unit* is *intermittent* and that the person: (1) has submitted data in accordance with schedule 3.1; and (2) has adequate communications and telemetry to support the issuing of *dispatch instructions* and the audit of responses. (c) In relation to an application under clause 2.2.2A(a) to classify as a *semi-scheduled generating unit* a *generating unit* with a *nameplate rating* of less than 30 MW, or a *generating unit* that is part of a group of *generating units*	Confusion over what constitutes a generating unit and what is a generating system. Chapter 5 relates to generating unit to be a singular generating unit. It calls a collective of generating units a generating system. This set of rule changes now uses semi-scheduled generating unit to refer to both the singular and the collective. This causes problems in several clauses in Chapter 3, 4 and 5 of these rule changes whenever there is a reference to generating unit or units and an obligation to conform at the 'generating unit level. A single wind turbine is small enough to be exempt from the NER, however large wind farms, as collectives, are not. These rule changes should be constructed so as to refer to the collective and not confuse the intention. These rules are drafted to suit around the dispatch system which is expecting a single unit to represent the wind farm. However in some places it is referring to the physical units. We have suggested a fix to the problem of needing to aggregate. This could also	(b) A person must not classify a *generating unit* or group of *identical generating units* as a *semi-scheduled generating unit* unless it has obtained the approval of *NEMMCO* to do so. *NEMMCO* must approve the classification if it is satisfied that the output of the *generating unit* or group of *identical generating units* is *intermittent* and that the person: (1) has submitted data in accordance with schedule 3.1; and (2) has adequate communications and telemetry to support the issuing of *dispatch instructions* and the audit of responses. (c) In relation to an application under clause 2.2.2A(a) to classify as a *semi-scheduled generating unit* a *generating unit* with a *nameplate rating* of less than 30 MW, or a ~~*generating unit* that is part of~~ a group of *identical generating units connected* at a common *connection point* with a combined *nameplate rating* of less than 30 MW and has a *connection point voltage* of less than 100kV, *NEMMCO* may approve the classification on such terms

connected at a common *connection point* with a combined *nameplate rating* of less than 30 MW, *NEMMCO* may approve the classification on such terms and conditions as *NEMMCO* considers appropriate. (d) A person must comply with any terms and conditions imposed by *NEMMCO* as part of an approval under clause 2.2.2A(b). (e) A *Generator* is taken to be a *Semi-Scheduled Generator* only in so far as its activities relate to any *semi-scheduled generating unit.* (f) A *Semi-Scheduled Generator* must operate any *semi-scheduled generating unit* in accordance with the co-ordinated *central dispatch* process operated by *NEMMCO* under the provisions of Chapter 3. (g) As described in Chapter 3, a *Semi-Scheduled Generator* must notify *NEMMCO* of the availability of each *semi-scheduled generating unit* in respect of each *trading interval*. (h) A *Semi-Scheduled Generator* may submit to *NEMMCO* a schedule of *dispatch offers* for each *semi-scheduled generating unit* in respect of each *trading interval* for *dispatch* by *NEMMCO*.	be done for a group of identical small units that are scheduled. However we The implications of this rule change on small projects with MV (66kV) and LV connections has not been investigated or understood. Please see the discussion in the covering letter. These smaller projects are in areas of the network for which NEMMCO has no oversight and for which it does not construct constraints. The local NSP works through any issues in the connection process. These projects are offsetting local load. (d) agree if changes in (a) (b) and (c) are made (e) agree if changes in (a) (b) and (c) are made. (f) agree if changes in (a) (b) and (c) are made. (g) – If we fix the definition to relate to the whole, then the availability variances can be treated as significant changes rather than every 2 MW variation. Please see our comments on this in the MT PASA, ST PASA and Pre-dispatch clauses	and conditions as *NEMMCO* considers appropriate.

2.2.2 A (b) (1)	Agree if schedule 3.1 is tidied up. Schedule 3.1 is clearly a draft of the data that is required in order to dispatch a large thermal generating unit. Suggest most of the data is NOT APPLICABLE to the very technology that is trying to be incorporate.	
2.2.2A (h)	Agree	
2.2.3 (a) Unless *NEMMCO* approves its classification as a *scheduled generating unit* under the provisions of clause 2.2.2(b)or as a *semi-scheduled generating unit*, a *generating unit* with a *nameplate rating* of less than 30 MW (not being part of a group of *generating units* described in clause 2.2.2(a)) may only be classified as a *non-scheduled generating unit* and not as a *scheduled generating unit*.	Agree if appropriately adjusted to for the change in connection point voltage requested in 2.2.2A (a) if the generating system is less than 30MW then regardless of connection point voltage you can be non-scheduled. This fits with the above proposal. – For clarity the clause should also refer to the clause 2.2.2A(a).	2.2.3 (a) Unless *NEMMCO* approves its classification as a *scheduled generating unit* under the provisions of clause 2.2.2(b)or as a *semi-scheduled generating unit*, a *generating unit* with a *nameplate rating* of less than 30 MW (not being part of a group of *generating units* described in clause 2.2.2(a) or 2.2.2A(a)) may only be classified as a *non-scheduled generating unit* and not as a *scheduled generating unit*.
2.11	Agree	
2.12	Agree	
3.7.1	Agree	
3.7.2 (c) (4) *unconstrained intermittent generation forecast* for each *semi-scheduled generating unit* for each *day*.	Agree: However, this is impossible given the definition in the Glossary. Wind data is unknown for the two year period. Suggest that this should be based on availability of wind turbines within a farm (available semi-scheduled generation) and perhaps multiplied by a seasonal or historical capacity factor.	
3.7.2 (d)	Suggest a threshold for changes to be included in	**New Clause INSERT**

	MT PASA would substantially reduce administrative overhead for operators, without compromising the effectiveness of MT PASA related processes.	3.7.2 (d)(1A) For the purposes of clause 3.7.2(d)(1), *semi-scheduled generating units* are not required to report on changes to their PASA *availability* if the PASA *availability* of the semi-scheduled generating unit is no less that 30MW below the registered capacity of the semi-scheduled generating unit.
3.7.2 (f) (3) (iii)	Agree	
3.7.2 (f) (3) (iv)	Agree	
3.7.2 (g)	Agree	
3.7.3 (d) (4)	Agree	
3.7.3 (e)	Definition of semi-scheduled generating unit defeats the intention. Availability should be defined at the connection point. (2) As the definition and operation of fast start plant under the current rules cannot be met by wind turbines, it is anticipated that most wind farms registering as semi-scheduled will designate themselves as slow start in order to control their self dispatch. The synchronisation and desynchronisation times should only be applicable for a whole of farm outage. Suggest a threshold for changes to be included in ST PASA would substantially reduce administrative overhead for operators, without compromising the effectiveness of ST PASA related processes.	**New clause INSERT** 3.7.3 (e)(1B) For the purposes of clauses 3.7.3(e)(1) and 3.7.3(e)(1A) *semi-scheduled generating units* are not required to report on changes to their *availability* or PASA *availability* if the *availability* or PASA *availability* of the semi-scheduled generating unit is no less that 30MW below the registered capacity of the *semi-scheduled generating unit*.
3.7.3 (h)	Agree	
3.8.1 (a)	Agree - If definition of semi-scheduled generating unit is clarified	.
3.8.1 (b) (12) *constraints* due to *unconstrained intermittent generation*	Requires clarification: 'unconstrained intermittent generation forecasts – use of these constraints	

forecasts for *semi-scheduled generating units*.	should be in accordance with the request document only.	
3.8.1 (e)	Agree only if 3.8.1(b) (12) clarified.	
3.8.2 (a)	Agree	
3.8.2 (b)	Agree	
3.8.3	Adds an additional layer of complexity to the definition. It is reasonable to allow aggregation – however these rules restrict the application of this such that it is unlikely to be helpful to wind farms which are more likely to be widespread.	
3.8.4 Notification of scheduled capacity.	Disagree with title of the clause. By definition semi-scheduled capacity is not scheduled capacity – hence title should be adjusted to included "semi-scheduled". Suggest that included a threshold for changes to be included in would substantially reduce administrative overhead for operators, without compromising the effectiveness of pre-dispatch and dispatch processes. It is noted the NEMMCO has access to scada data on the number of units on line at an point in time. This seem an ideal input to the wind forecasting module.	Change to: 3.8.4 Notification of scheduled <u>and semi-scheduled</u> capacity 3.8.4 a(1). For the purpose of clause 3.8.4(a1), a *semi-scheduled generating unit* is not required to notify NEMMCO of changes to anticipated available capacity if the anticipated available capacity is within 30MW of the registered capacity of the *semi-scheduled generating unit*..
3.8.4 (a)	Agree Requires clarification - that it is the available capacity of the connected generating units that constitute the semi-scheduled generating unit for each trading interval.	
3.8.6 (a)	Agree	
3.8.6(c) the MW quantities specified	Requires correction. What are **the terminals** of a	Request: 3.8.6(c) the MW quantities specified are to apply

are to apply at the terminals of the *scheduled generating unit* or *semi-scheduled generating unit* or, with *NEMMCO*'s agreement, at any other point in the *Scheduled Generator's* or *Semi-Scheduled Generator's* electrical installation or on the *network*;	semi-scheduled generating unit given the definition as a group of generating units? Suggest the clause be amended. (Request is consistent with 3.8.6 (g))	at the terminals of the *scheduled generating unit* or the *connection point* of a *semi-scheduled generating unit* or, with *NEMMCO*'s agreement, at any other point in the *Scheduled Generator's* or *Semi-Scheduled Generator's* electrical installation or on the *network*;
3.8.6(g)	Agree	
3.8.6(h)	Agree	
3.8.6(i)	Agree	
3.8.6(l) an *off-loading price* specified for a *price band* is to be interpreted as the maximum price payable to *NEMMCO* by the *Scheduled Generator* or *Semi-Scheduled Generator* in respect of the *generating unit*'s *sent out generation* with the *generating unit's* output reduced below its specified *self-dispatch level* in the *central dispatch* process by an amount less than the specified MW increment;	Undecided: Here the definition (and use of) 'generating unit' is in conflict with the definition.	Suggest:: 3.8.6(l) an *off-loading price* specified for a *price band* is to be interpreted as the maximum price payable to *NEMMCO* by the *Scheduled Generator* or *Semi-Scheduled Generator* in respect of the *scheduled generating unit*'s *sent out generation* with the *scheduled generating unit's* output or the or *semi-scheduled generating unit*'s *sent out generation* with the *semi-scheduled generating unit's* output reduced below its specified *self-dispatch level* in the *central dispatch* process by an amount less than the specified MW increment;
3.8.8 (a)	Agree	
3.8.8 (b)	Agree	
3.8.8 (c)	Agree	
3.8.8 (d)	Agree	
3.8.9 (a)	Agree	
3.8.9 (b)	Agree	
3.8.9 (c)	Agree	
3.8.9 (e)	Agree	
3.8.10	Agree	Key point!
3.8.14	Agree	

3.8.16	Agree	
3.8.17 (a) *Slow start generating units* are *generating units* which are unable to *synchronise* and increase *generation* within 30 minutes of receiving an instruction from *NEMMCO*.	Disagree with the inclusion of semi-scheduled generating units into this clause **as it is currently defined**. Semi-scheduled units **cannot** meet this definition – nor can they meet the dispatch inflexibility profile. These are the only two dispatch profiles that exist in the NEMDE. We request that the definition under (a) be altered to broaden the definition to allow semi-scheduled to naturally access to the self-commitment rules. We also request a review of the commitment, decommitment and iinflexibility rules -3.8.17, 3.8.18 and 3.8.19. In the meantime we strongly recommend the adoption of our amended rule. This is again trying to make renewable energy fit the market dispatch box without alteration. Slow start definition fits large thermal plant, bid inflexibility profile suits a gas generating unit. Hydro generation has always had trouble with the fast start profile, and wind cannot meet either definition.	Rewrite the definition in 3.8.17 (a) Subject to (a1), *slow start generating units* are *generating units* which are unable to be *dispatched* in accordance with the *dispatch inflexibility profile.* **INSERT** (a1) Where a *semi-scheduled generating unit* is made up of a number of *intermittent generating units connected* at a *common connection point*, the *semi-scheduled generating unit* in its entirety, and not each *intermittent generating unit*, is the *slow start generating unit* for the purposes of this clause. **OR** **Alternative to (a1) given the new definitions**: A *semi-scheduled generating unit* that is a *generating system of identical generating units connected* at a *common connection point*, the *semi-scheduled generating unit* in its entirety, and not each *generating unit*, is the *slow start generating unit* for the purposes of this clause.
3.8.17 (b) to (h)	If change to (a) are made, then agree to inclusion in these clauses.	
3.8.18(b) *Scheduled Generators* and *Semi-Scheduled Generators* must notify *NEMMCO* of their planned *self-decommitment* decisions in relation to *slow start generating units* at least 2	Agree only if suggested changes are made to the definition of slow start generating unit. IF the current definition of slow start unit is applied then it implies 2 days prior notification on	

days in advance of *dispatch*.	the stopping and starting of individual units. This is not feasible for wind farms.	
3.8.19 (a1) If a *Semi-Scheduled Generator* reasonably expects one or more of its *semi-scheduled generating units* to be unable to operate in accordance with *dispatch instructions* in any *trading interval* due to abnormal *plant* conditions or other abnormal operating requirements in respect of that *semi-scheduled generating unit*, it must advise *NEMMCO* through the *PASA* process or in its *dispatch offer* in respect of that *semi-scheduled generating unit*, as appropriate under this Chapter, that the *semi-scheduled generating unit* is *inflexible* in that *trading interval* and must specify a maximum *loading level* at or below which the *semi-scheduled generating unit* is to be operated in that *trading interval*.	Wording change suggested "semi-scheduled generating units" it is unnecessary to pluralise in this case suggest using the singular as it covers the requirement adequate and removes confusion due to the nature of the definition. Inflexibility is required at times during commissioning in order to achieve a reliability test on the farm performance.	Reword: If a *Semi-Scheduled Generator* reasonably expects ~~one or more of~~ its *semi-scheduled generating unit*~~s~~ to be unable to operate in accordance with <u>its</u> *dispatch instructions* in any *trading interval* due to abnormal *plant* conditions or other abnormal operating requirements in respect of that *semi-scheduled generating unit*, it must advise *NEMMCO* through the *PASA* process or in its *dispatch offer* in respect of that *semi-scheduled generating unit*, as appropriate under this Chapter, that the *semi-scheduled generating unit* is *inflexible* in that *trading interval* and must specify a maximum *loading level* at or below which the *semi-scheduled generating unit* is to be operated in that *trading interval*.
3.8.19 (b)	Agree if changes to (a) accepted.	
3.8.19(c)	Agree if changes to (a) accepted	
3.8.19(d)	Hard to imagine a wind farm fitting a fast profile, however a different technology may need this. Agree if changes to 3.8.17(a) accepted.	
3.8.19(e) and (f)	Agree if changes to (a) accepted	
3.8.20(c) (c) *NEMMCO* must determine the *pre-dispatch schedule* for each *trading interval* on the basis of *dispatch bids*, *dispatch offers* and *market*	Agree	

ancillary service offers submitted for that *trading interval,* and *NEMMCO's* forecast *power system load* for each *region* for that *trading interval*, *NEMMCO's unconstrained intermittent generation forecast* for each *semi-scheduled generating unit* for that *trading interval,* and by using a process consistent with the principles for *central dispatch* as set out in clause 3.8.1.		
3.8.20(g)	Agree	
3.8.20(i)	Agree	
3.8.20(j) The following *pre-dispatch* outputs relating specifically to a *generating unit*, *scheduled network service*, *scheduled load* or *ancillary service load* operated by a *Scheduled Generator*, *Semi-Scheduled Generator* or *Market Participant* must be made available electronically to that *Scheduled Generator*, *Semi- Scheduled Generator* or *Market Participant* on a confidential basis: (1) the scheduled times of *commitment* and *de-commitment* of individual *slow start generating units*; (2) scheduled half hourly *loading* for each scheduled entity; (3) scheduled provision of *ancillary services*;	Requires correction as "specifically to a generating unit" is not relevant to a semi-scheduled generating unit. Also the **scheduled loading** is inapplicable to the semi-scheduled generating units in this case it would be the half hourly "unconstrained intermittent generation forecast". Agree to 3.8.20(j) (1) if changes to 3.8.17(a) accepted.	Suggest: The following *pre-dispatch* outputs relating specifically to a *scheduled generating unit*, *semi-scheduled generating unit*, *scheduled network service*, *scheduled load* or *ancillary service load* operated by a *Scheduled Generator*, *Semi-Scheduled Generator* or *Market Participant* must be made available electronically to that *Scheduled Generator*, *Semi- Scheduled Generator* or *Market Participant* on a confidential basis: (1) the scheduled times of *commitment* and *de-commitment* of individual *slow start generating units*; (2) scheduled half hourly *loading* for each scheduled entity; (2a) half hourly *unconstrained intermittent generation forecast* for each semi-scheduled generating unit; (3) scheduled provision of *ancillary services*; (4) scheduled *constraints* for the provision of *ancillary services*; and

(4) scheduled *constraints* for the provision of *ancillary services*; and (5) scheduled *constraints* due to *network* limitations.		(5) scheduled *constraints* due to *network* limitations. (5a) scheduled half hourly forecast of semi-dispatch intervals
3.8.20(k)	Agree	
3.8.21(d) Where possible, *dispatch instructions* will be issued electronically via the *automatic generation control system* or via an electronic display in the *Scheduled Generator's*, *Semi-Scheduled Generator's* or *Market Participant's plant* control room. *NEMMCO* may issue *dispatch instructions* in some other form if in its reasonable opinion the methods described in this clause 3.8.21(d) are not possible.	Suggest re-wording to broaden this clause to include plant that do not have AGC systems or 'plant control' rooms. Wind farms do not have automatic generation control systems (AGC) equivalent to the industry standard. Wind farms do not have large plant control rooms – they have processors and automated control functions. It is anticipated that the dispatch signal will need to be received through the SCADA system and wind farm power regulating control systems would regulate the power output. It would be unusual to have a 24x7 manned control room located **at** the wind farm (plant)	Suggest: 3.8.21 (d) Where possible, *dispatch instructions* will be issued electronically to *Scheduled Generators*, *Semi-Scheduled Generators* or *Market Participants.* The dispatch instruction may be via the *automatic generation control system,* or transmitted to a *semi-scheduled generating unit's* power control system, or via an electronic display in the *Scheduled Generator's*, *Semi-Scheduled Generator's* or *Market Participant's plant* control room or other site as agreed with NEMMCO. *NEMMCO* may issue *dispatch instructions* in some other form if in its reasonable opinion the methods described in this clause 3.8.21(d) are not possible.
3.8.21(e)	Broaden the description of the methods of supplying the dispatch instruction to include wind farms. As suggested in 3.8.21(d)	
3.8.21(j)	Agree	
3.8.21(l)	Agree	
3.8.21(m)	Agree	
3.8.22	The Rule change as proposed by NEMMCO applies Clause 3.8.22 Rebidding to semi-scheduled generators. It is understood that these clauses are intended to prevent inappropriate exercise of market power in the NEM through	

	withdrawal or repricing of capacity at short notification. It is acknowledged that in theory a semi-scheduled generator could conceivably be part of a larger portfolio with short term pricing power in the NEM, however NEMMCO has not presented any evidence or argument to indicate that such a situation has or is likely to result in un-desirable or in-efficient market outcomes. It is also noted that Clause 3.8.22 is highly prescriptive in nature, creating the potential for a technical breach of these requirements in the absence of either an inappropriate intent to influence market outcomes, or an actual impact on market outcomes. The risk of enforcement action arising from a 'technical breach' of the rebidding provisions can result in economically detrimental behaviour by wind farms operated as semi-scheduled generators. This behaviour includes: • Un-necessarily high commitment of resources to compliance management, both in the planning and operational timeframes. • Reduced efficiency of plant operation arising from reluctance of operational staff to re-bid (noting that penalties under the NEL for breach of these conditions apply to individuals as well as the company). The risk of enforcement action is also highly	

	inequitable. For example any operator with a strong brand is likely to suffer reputation damage well in excess of any fine levied for a 'technical breach' of these requirements. For the reasons outlined above, it is proposed that the re-bidding provisions of clauses 3.8.22 and 3.8.22A not be applied to semi-scheduled generation, and that the references to semi-scheduled generation in clause 3.8.22 be deleted from the proposed Rule. Should it be conclusively demonstrated (at a later date) that application of re-bidding provisions to semi-scheduled generation is necessary to prevent inefficient operation of the NEM, Auswind would support such a proposal.	
3.8.22(b) Subject to clauses 3.8.22(c) and 3.8.22A, a *Scheduled Generator*, *Semi-Scheduled Generator* or *Market Participant* may vary its available capacity, daily *energy constraints*, *dispatch inflexibilities* and *ramp rates* of *generating units*, *scheduled network services* and *scheduled loads*, and the *response breakpoints*, *enablement limits* and response limits of *market ancillary services*.	Here the concept of a semi-scheduled generating unit as a collective conflicts with the use of 'generating unit' again. The bid for a semi-scheduled generating unit will be for and on behalf of a collective of units.	Suggest: 3.8.22(b) Subject to clauses 3.8.22(c) and 3.8.22A, a *Scheduled Generator*, *Semi-Scheduled Generator* or *Market Participant* may vary its available capacity, daily *energy constraints*, *dispatch inflexibilities* and *ramp rates* of *scheduled generating units or semi-scheduled generating units*, *scheduled network services* and *scheduled loads*, and the *response breakpoints*, *enablement limits* and response limits of *market ancillary services*.
3.8.22(c)	Agree but excessive. Additional cost and systems for what was intended to provide NEMMCO with a system security management tool.	

3.8.22(d)	Agree	
3.8.22A (a)	Agree	
3.8.22A (b)	Agree	
3.8.23 (a) If a *scheduled generating unit*, *semi-scheduled generating unit*, *scheduled network service* or *scheduled load* fails to respond to a *dispatch instruction* within a tolerable time and accuracy (as determined in *NEMMCO's* reasonable opinion), then: (1) the *scheduled generating unit*, *semi-scheduled generating unit*, *scheduled network service* or *scheduled load* (as the case may be) is to be declared and identified as non-conforming; and (2) the *scheduled generating unit*, *semi-scheduled generating unit*, *scheduled network service* or *scheduled load* (as the case may be) cannot be used as the basis for setting *spot prices*.	Requires correction to ensure that the compliance period for a semi-scheduled generating unit is only subject to conformance during a semi-dispatch interval. The description in the Request for Rule Change does not align with the clauses (a) and (a1). A dispatch instruction can contain more information than the generating unit's generation. The proposed clause 3.8.23 (a1)(2) IF NEMMCO require control on any other characteristic of the plant it should be done through direction – these dispatch instructions were only ever intended to manage the active power flows.	Request: 3.8.23 (a) If a *scheduled generating unit*, *semi-scheduled generating unit* during a *semi-dispatch interval*, *scheduled network service* or *scheduled load* fails to respond to a *dispatch instruction* within a tolerable time and accuracy (as determined in *NEMMCO's* reasonable opinion), then: (1) the *scheduled generating unit*, *semi-scheduled generating unit*, *scheduled network service* or *scheduled load* (as the case may be) is to be declared and identified as non-conforming; and (2) the *scheduled generating unit*, *semi-scheduled generating unit*, *scheduled network service* or *scheduled load* (as the case may be) cannot be used as the basis for setting *spot prices*.
3.8.23 (a1) To avoid doubt: (1) in a *semi-dispatch interval*, if a *semi-scheduled generating unit's* actual *generation* is less than the *dispatch cap* specified in a *dispatch instruction* at the target time, this does not constitute a *semi-scheduled generating unit* failing to respond to that *dispatch instruction*; and (2) in a *non-semi-dispatch interval*, a *semi-scheduled generating unit* need	Disagree – the dispatch instruction according to 4.9.5 can contain more information than just the active power see 4.9.2(a) (2). Our request for change in this table corrects the clause to do what NEMMCO has asked for- that is that we be capable of controlling the active power output to less than or equal to the dispatch cap during a semi-dispatch interval. If this change is not implemented it would infer that there are other instructions (reactive power, transformer tap – voltage set points etc..) that would require	Request (a1) To avoid doubt: (1) in a *semi-dispatch interval*, if a *semi-scheduled generating unit's* actual *generation* is less than the *dispatch cap* specified in a *dispatch instruction* at the target time, this does not constitute a *semi-scheduled generating unit* failing to respond to that *dispatch instruction*; and (2) in a *non-semi-dispatch interval*, a *semi-scheduled generating unit* need not respond to a *dispatch instruction.* ~~to the extent that the *dispatch instruction* relates to the *semi-scheduled generating unit's generation.*~~

not respond to a *dispatch instruction* to the extent that the *dispatch instruction* relates to the *semi-scheduled generating unit's generation*.	controlling in all dispatch intervals. Not the intention of this rule change.	
3.8.23 (b)	Agree only if changes made to (a) and (a1)	
3.8.23 (c) Until a *Scheduled Generator*, *Semi-Scheduled Generator*, *Scheduled Network Service Provider* or *Market Customer* satisfactorily responds to the requests under clauses 3.8.23(b)(1) and (2) and *NEMMCO* is satisfied that the *generating unit*, *scheduled network service* or *scheduled load* (as the case may be) will respond to future *dispatch instructions* as required, the *generating unit*, *scheduled network service* or *scheduled load* (as the case may be) continues to be non-conforming.	Refers to generating unit – again.	3.8.23 (c) Until a *Scheduled Generator*, *Semi-Scheduled Generator*, *Scheduled Network Service Provider* or *Market Customer* satisfactorily responds to the requests under clauses 3.8.23(b)(1) and (2) and *NEMMCO* is satisfied that the *scheduled generating unit*, *semi-scheduled generating unit*, *scheduled network service* or *scheduled load* (as the case may be) will respond to future *dispatch instructions* as required, the *scheduled generating unit*, *semi-scheduled generating unit,* *scheduled network service* or *scheduled load* (as the case may be) continues to be non-conforming.
(d) If a *generating unit*, *scheduled network service* or *scheduled load* (as the case may be) continues to be non-conforming after a reasonable period of time, *NEMMCO* must prepare a report setting out the details of the non-conformance and forward a copy of the report to the *Scheduled Generator*, *Semi-Scheduled Generator*, *Scheduled Network Service Provider* or *Market Customer* (as the case may be) and the *AER*.	Refers to generating unit again.	(d) If a *scheduled generating unit*, *semi-scheduled generating unit,* *scheduled network service* or *scheduled load* (as the case may be) continues to be non-conforming after a reasonable period of time, *NEMMCO* must prepare a report setting out the details of the non-conformance and forward a copy of the report to the *Scheduled Generator*, *Semi-Scheduled Generator*, *Scheduled Network Service Provider* or *Market Customer* (as the case may be) and the *AER*.

3.9	Agree- although hard to figure how a wind farm is constrained on.	
3.12.A.1	Agree	
3.12A.4	Agree	
3.12A.5	Agree	
3.12.A.7	Agree	
3.12.A.9	Agree	
3.13.1	Agree	
3.13.2	Agree	
3.13.3(a)	Agree	
3.13.3 (b) All *Scheduled Generators*, *Semi-Scheduled Generators* and *Market Participants* must provide *NEMMCO* with the *registered bid and offer data* relevant to their *scheduled loads*, *scheduled network services* and *generating units* in accordance with schedule 3.1.	Disagree – Schedule 3.1 should not refer to the 'generating unit' level for a semi-scheduled generating unit that represents a group of generating units behind a connection point. Suggest adjusting the black box mentality to ensure that this law reflects what we mean. Schedule 3.1 is relevant for large thermal machines – it requires a redraft to represent semi-scheduled intermittent generation. 'generating unit' is a defined term and has not been re-defined to allow for its use being representative of the collective. – Poor drafting and will cause confusion.	Suggest that this clause read: (b) All *Scheduled Generators*, *Semi-Scheduled Generators* and *Market Participants* must provide *NEMMCO* with the *registered bid and offer data* relevant to their *scheduled loads*, *scheduled network services, scheduled generating units* and *semi-scheduled generating units* in accordance with schedule 3.1.
3.13.3 (c) (1)	Agree: Refers to 5.6.1 which in turn refers to Schedule 5.7 – Suggest that some effort should go into this schedule to ensure that it reflects the data necessary for long term wind forecasting.	
3.13.3 (d)	Same comment as above.	
3.13.3.(e) – (p)	Agree	
3.13.3 (q)	Agree	
3.13.3 (t)	Agree	

3.13.4 (k1)	Agree	
3.13.4.(p) (5) the *ramp rate* of each *generating unit*, *scheduled load* and *scheduled network service* as measured by *NEMMCO's* telemetry system; and	Disagree: Only sensible if ramp rate is for the semi-scheduled generating unit – ramp rates for individual wind turbines are meaningless.	3.13.4.(q) (5) the *ramp rate* of each *scheduled generating unit*, *semi-scheduled generating unit,* *scheduled load* and *scheduled network service* as measured by *NEMMCO's* telemetry system; and
(q) Each *day*, in accordance with the *timetable*, *NEMMCO* must *publish* details of actual *generation*, *dispatched generation*, *dispatched network service* or *dispatched load* for each *scheduled generating unit*, *semi-scheduled generating unit*, *scheduled network service* and *scheduled load*, respectively, and *unconstrained intermittent generation forecast* data for each *semi-scheduled generating unit* and as *regional* totals, in each *trading interval* for the previous *trading day*.	Disagree – why is the individual UIGF being published ? If actual generation is being published. No justification has been given for the inclusion of this forecast in the public data. It only makes sense to publish the *dispatch cap* in periods when there has been a binding network constraint against a semi-scheduled generating unit and it has been in a semi-dispatch interval.	(q) Each *day*, in accordance with the *timetable*, *NEMMCO* must *publish* details of actual *generation*, *dispatched generation*, *dispatched network service* or *dispatched load* for each *scheduled generating unit*, *semi-scheduled generating unit*, *scheduled network service* and *scheduled load*, respectively, and for *semi-dispatch intervals* the *semi-dispatch cap*, and for *non-semi-dispatch intervals* the *unconstrained intermittent generation forecast* data for each *semi-scheduled generating unit* ~~and as~~ ~~the *regional* totals~~, in each *trading interval* for the previous *trading day*.
3.13.7 (d) (3)	Agree	
3.14.6 (a)	Agree – and for the first time the draft acknowledges the difference between a scheduled "generating unit" and a "semi-scheduled generating unit"	
3.14.6(e) (3)	Agree – price taker should still have access to recover $ if adversely impacted by an administered cap or suspension	
3.15.6A(k) (4)(c)	Disagree – (is this a Microsoft invasion?.)	
3.15.6A(k) (5) a *Semi-Scheduled Generator* will not be assessed as	Concerned with implementation: technically, depending on the size of the step change required	**Suggest:** 3.15.6A(k) (5) a *Semi-Scheduled Generator* will not be

contributing to the deviation in the *frequency* of the *power system* if within a *dispatch interval*, the *semi-scheduled generating unit*: (i) ramps its actual *generation* at a uniform rate over a *semi-dispatch interval* to the *dispatch cap*; (ii) ramps its actual *generation* at a uniform rate over a *non-semi dispatch interval*; (iii) is *enabled* to provide a *market ancillary service* and responds to a control signal from *NEMMCO* to *NEMMCO's* satisfaction; or (iv) is not *enabled* to provide a *market ancillary service*, but responds to a need for *regulation services* in a way that tends to reduce the aggregate deviation.	due to the **dispatch cap** being implemented- it may not be possible to change the output of a wind farm in a uniform fashion. There is no limit during a non-semi-dispatch interval, the uniform is currently taken to the line of best fit on the actual generation. We agree with this method. Suggest also that the uniform rate be defined as we have already debated this and agreed the methodology in the ancillary services procedure.	assessed as contributing to the deviation in the *frequency* of the *power system* if within a *dispatch interval*, the *semi-scheduled generating unit*: (i) ramps its actual *generation* at a uniform rate over a *semi-dispatch interval* to the *dispatch cap*; (ii) ramps its actual *generation* at a uniform rate over a *non-semi dispatch interval,* where the uniform rate is the gradient of the line of best fit measured on the actual *generation* in each *non-semi-dispatch interval*; (iii) is *enabled* to provide a *market ancillary service* and responds to a control signal from *NEMMCO* to *NEMMCO's* satisfaction; or (iv) is not *enabled* to provide a *market ancillary service*, but responds to a need for *regulation services* in a way that tends to reduce the aggregate deviation.
3.15.7 (c)	Agree – but hard to see NEMMCO directing a wind farm for the provision of energy. Unless they have insights to the weather that are beyond the norm.	
3.15.7A(c)(1)(ii)(A)	Agree	
3.15.7B(a)(1)	Agree – it must be noted that "the aggregate loss of revenue" in the case of wind farms would include the loss of REC or other tradable item such as carbon credits. The majority of this clause is based on compensating the large generators for delaying or moving planned maintenance, this is an	Insert clause (a3A)

	externality to the market. Semi-scheduled generation if it directed 'off' for reliability or security purposes should be entitled to claim the loss of revenue in total, this would include the loss of carbon credit income. – It should also be noted that constraining off emission free generation is reducing the amount of carbon credits available to retailers. This is likely to cause an increase in the price of RECs (or equivalent over time.)	
3.15.7B (a3)	Requires adjustment – as intermittent generation has no fuel cost it should be accepted that its likely	Insert Clause (a3A) (a3A) For the purposes of the calculation of aggregate loss of revenue pursuant to clause 3.15.7B(a)(1) and clause 3.15.7B(a1)(1), the foregone revenue due to reduced energy production and loss of *renewable energy benefits* is to be included in full.
3.15.7B(a3)(1)	Agree – but the whole point of wind or solar is that the fuel costs are $0	
3.15.7B(a3)(2) to (7)	This clause is suited to compensate for the externalities of large generation with planned outages. Wind Farms constrained on would be an extra-ordinary. There is a case to argue for compensation for being constrained off.	
3.15.10	Agree	
3.15.10B	Agree -	
3.16.1	Agree	
3.16.2 (d1)	Agree	
3.16.2 (f1)	Agree	
3.16.2 (h)(1)	Agree	
Schedule 3.1	**Disagree** – This Semi-Scheduled Generating Unit	***Semi-Scheduled Generating Unit Data:***

Semi-Scheduled Generating Unit Data: **Data Units of Measurement** ***Power station* information:** node number/identifier total station registered capacity MW total station *sent out* capacity at registered capacity MW daily *energy constraint,* if applicable MWh per day ***Generating unit* information:** full *load* MW (*generated* and *sent out)* normal or technical minimum *load* MW (*generated* and *sent out)* additional emergency *generation* above registered capacity MW normal and maximum *ramp rates* MW/minute response time to full *load* from cold standby minutes aggregation data capability chart notice to *synchronise* minutes minimum shutdown time minutes maximum shutdowns per day	data is a direct copy of data required for large thermal plant – also this data is specified at the generating unit level - this is inconsistent with the definition and requires correction – what are we really trying to dispatch? This is an example of not wanting to alter the current dispatch box to fit a new technology. Speechless – what can be corrected here? Can we register the semi-scheduled generating unit on the sent out Normal and maximum ramp rates are not a controlled item in wind farms – this is dependent on the rate of change of wind. -Response time from "**cold standby**" – (no such thing in a wind farm as we do not have to BOIL water!) -Response time to full load is dependent on rate of change of wind. Aggregation data for a semi-scheduled generating unit is misleading. Capability chart – is this for the reactive capability at the connection point? -Notice to synchronise (!!!) – must be synchronisation is on closure of **connection point** CB. -Slow shut-down per unit ? or shut down at the connection point. Preference would be shut down slowly per unit. Time varies depending on wind turbine type. This is a GAS turbine issue -maximum shutdowns per day – depends on	**Data Units of Measurement** ***~~Power station~~ Connection Point* information:** node number/identifier total ~~station~~ registered capacity MW total ~~station~~ *sent out* capacity at registered capacity MW at the *connection point* daily *energy constraint,* if applicable MWh per day ***Semi-Scheduled Generating unit* information:** full *load* MW (*generated* and *sent out)* ~~normal or technical minimum *load* MW (*generated* and *sent out)*~~ ~~additional emergency *generation* above registered capacity MW~~ normal and maximum *ramp rates* MW/minute ~~response time to full *load* from cold standby minutes~~ aggregation data capability chart (at the connection point?) notice to *synchronise* at the *connection point* minutes minimum shutdown time minutes ~~maximum shutdowns per day~~

	whether they have been controlled shutdowns or emergency trip due to loss of connection point CB.- again this is designed for gas turbines. If not thought through then GIGO may follow. We have no answers as this is obviously a function of NEMDE and requires NEMMCO to think through what data they really need from Intermittent generation. Terminology used here does make it clear that this is an intermittent source of energy.	
Schedule 3.1 ***Aggregation Data*** Where *dispatch bids* or *dispatch offers* are submitted for aggregated *generating units*, *market network services* or *loads* as approved by *NEMMCO* under clause 3.8.3 then, unless otherwise exempted by *NEMMCO*, each *Scheduled Generator*, *Semi- Scheduled Generator* and *Market Participant* must provide the information required in accordance with this schedule 3.1 for each *generating unit*, *market network service* or *load* included in those *dispatch bids* or *dispatch offers* both separately and in aggregated form.	Disagree – this wording is indicative of the confusion caused by the current definition of semi-scheduled generating unit. It is unclear whether NEMMCO expect every large wind farm to apply for aggregation or not. 2.2.2A would suggest not – but this clause would expect it. Suggest the use of aggregated semi-scheduled generating units. Also it should be clarified here that a single wind need not apply for aggregation according to the definition in 2.2.2A	Request the following: A *scheduled generating unit* or *semi-scheduled generating unit* consisting of a *generating system of identical generating units* is treated as a single *scheduled generating unit* or *semi-scheduled generating unit* and for the purpose of this Schedule 3.1 will not be considered as aggregated *generating units.* Where *dispatch bids* or *dispatch offers* are submitted for aggregated *scheduled generating units*, aggregated *semi-scheduled generating units*, *market network services* or *loads* as approved by *NEMMCO* under clause 3.8.3 then, unless otherwise exempted by *NEMMCO*, each *Scheduled Generator*, *Semi- Scheduled Generator* and *Market Participant* must provide the information required in accordance with this schedule 3.1 for each *generating unit*, *semi-scheduled generating unit, market network service* or *load* included in those *dispatch bids* or *dispatch offers* both separately and in aggregated form.

4.1.1(a) (3) (iv)	Agree – if 'dispatch' definition remains consistent with the intention to control only active power output only during times of network constraint in a semi-dispatch interval.	
4.3.1 (i)	Agree with same comment above	
4.4.2(a) *NEMMCO* may give *dispatch instructions* in respect of *scheduled generating units, semi-scheduled generating units, scheduled loads, scheduled network services* and *market ancillary services* pursuant to clause 4.9.	Disagree: the clause 4.9 wording is inconsistent with definition of a semi-scheduled generating unit. Also Clause 4.9 goes beyond that agreed – that these rule changes are meant to be concerned with control of ACTIVE power during times of network congestion. This was intended to provide an automated method via the semi-dispatch interval flag by which an automated wind farm control can control its power output. Control of the connection point voltage is outside the context of this set of rule changes there is no efficiency gain or reason given for these rules going beyond what was agreed in the reference group. (Agree if changes proposed are adopted in clause 4.9.)	
Clause 4.9.2(a1)	***Conformance with a NEMMCO dispatch instruction involving tap changer settings, reactive power set point or voltage control systems set points could limit the ability a generator to meet generator performance standards*** Clause 4.9.2(a1) creates the requirement for semi-scheduled generating unit to comply with Clause	New clause: 4.9.2(c1). A ~~*semi-scheduled*~~ *generating unit* that cannot meet a generator performance standard as a result of responding to a *dispatch instruction* issued by NEMMCO is deemed to have met the relevant generator performance standard.

	4.9.2(b). This gives NEMMCO the ability to instruct a generator to adjust transformer tap changers, voltage control system set points and reactive power set points. For wind generating systems at the peripheries of the network, reactive power coordination and management of voltage profile across a wind farm can be critical to achieving compliance with generator performance standards, particularly with respect to 'disturbance ride through'. For this reason a generator could be caused to breach its generator performance standards as a result of complying with a NEMMCO dispatch instruction under Clause 4.9.2(b). This could affect all generating units. Proposed Solution: A semi-scheduled generator that cannot meet a generator performance standard as a result of responding to a dispatch instruction issued by NEMMCO is deemed to have met the relevant generator performance standard	
4.4.2 (b) Each *Generator* must ensure that all of its *generating units* have responsive speed *governor systems* in accordance with the requirements of schedule 5.2, so as to automatically share in changes in *power system demand* or loss of *generation* as it occurs through response to the resulting excursion in *power system frequency*.	DISAGREE This clause needs to be updated '*governor system*" no longer exists in Schedule 5.2 – the technical standards altered this to be more technology neutral. S5.2.5.11 covers this. Response needs to be in accordance with the negotiated standard. Wind turbines will ride through most low frequency events but cannot produce additional power on call. Turbines can respond to high	**Request** 4.4.2 (b) (b) Each *Generator* must ensure that all of its *generating units* ~~have responsive speed *governor systems*~~ respond in accordance with their performance standards as negotiated under ~~of~~ schedule 5.2, so as to automatically share in changes in *power system demand* or loss of *generation* as it occurs through response to the resulting excursion in *power system frequency*.

	frequency events. Wind turbines –(or solar panels for that matter) do not have 'speed *governor systems* they cannot regulate the entry of the primary energy.	
4.8.5 (c)	Agree	
4.8.5A	Agree	
4.9.2(1)	Agree with minor corrections	
4.9.2(a1) (a1) To implement *central dispatch* or, where *NEMMCO* has the power to direct or to instruct a *Semi-Scheduled Generator* either under Chapter 3 or this Chapter, for the purpose of giving effect to that direction or instruction, *NEMMCO* may at any time give an instruction to a *Semi-Scheduled Generator* in relation to its *semi-scheduled generating units* (a *dispatch instruction*), in accordance with clause 4.9.5, nominating: (1) whether the facilities for *generation* remote control by *NEMMCO*, if available, must be in service; and (2) the maximum level of power to be supplied by the *generating unit*.	Disagree – several issues. 1. content of a dispatch instruction has been broaden to include the transformer tap position - this infers 24x7 response to a dispatch instruction. 2. The intention of these rule changes was to capture power output only in the event that there was a network control issue and that dispatch instruction become active ONLY during a **semi-dispatch interval**. There is no comment on how a semi-scheduled generating unit is to activate its response to a dispatch instruction outside of these times. 3. Some of the functions in a dispatch instruction may demand a change in transformer tap position. This is voltage control at the connection point. This is beyond the agreed scope of this set of rule changes. It is intended that this change should not alter the power to direct. However the intention of this set of rule changes is to require a semi-scheduled generator to follow a dispatch instruction **only**	Request: 4.9.2(a1) To implement *central dispatch* or, where *NEMMCO* has the power ~~to direct or~~ to instruct a *Semi-Scheduled Generator* ~~either~~ under Chapter 3 ~~or this Chapter~~, for the purpose of giving effect to that ~~direction or~~ instruction, *NEMMCO* may during a *semi-dispatch interval* ~~at any time~~ give an instruction to a *Semi-Scheduled Generator* in relation to its *semi-scheduled generating units* (a *dispatch instruction*), in accordance with clause 4.9.5, nominating: (1) whether the facilities for *generation* remote control by *NEMMCO*, if available, must be in service; and (2) the maximum level of power to be supplied by the *semi-scheduled generating unit*. 4.9.2(a2) To implement *central dispatch* or, where *NEMMCO* has the power to direct a *Semi-Scheduled Generator* under this Chapter, for the purpose of giving effect to that direction, *NEMMCO* may at any time give a direction to a *Semi-Scheduled Generator* in relation to its *semi-scheduled generating units*, nominating: (1) whether the facilities for *generation* remote control by *NEMMCO*, if available, must be in service; and (2) the maximum level of power to be supplied by the

	when the semi-dispatch interval flag is set.	*semi-scheduled generating unit.*
4.9.2(d)	Disagree with concern- the intention of the semi-dispatch rule changes was to create the ability of NEMMCO to manage network power flows- that is the **active power** output of significant non-scheduled (intermittent generation) when the network flows were violated. That was to be done through automated receipt of a dispatch cap and flag into the SCADA systems that automatically regulate the wind farm's connection point power and in some case reactive power. This infers that each wind farm has a 24x7 control room – this is not always the case particularly for 30MW wind farms. Request: recognition of the automated nature by which this control is intended to be implemented. This set of changes already requires a trading capability, it is forcing a control room function.	
4.9.2(e)	The Requirements for 24hr personnel availability could be interpreted as placing an onerous and costly obligation on semi-scheduled generators to run 24hr shifts. To avoid these potential costs, it should be made clear that there is no requirement for 24hr personnel availability if a semi-scheduled generator is able to automatically respond to an electronic dispatch instruction issued by NEMMCO.	4.9.2(e) For the avoidance of doubt, a Semi-scheduled generator has complied with Clause 4.9.2(d) if it is able to respond automatically to a dispatch instruction issued electronically by NEMMCO.

4.9.2 A	Not part of the scope of set of rule changes. Indicative of NEMMCO going outside of its brief..	
4.9.3	Outside of the scope of this set of work.	
4.9.4(a) A ~~*Scheduled*~~ *Generator* must not, unless in the ~~*Scheduled*~~ *Generator's* reasonable opinion public safety would otherwise be threatened or there would be a material risk of damaging equipment or the environment: (a) send out any *energy* from a *scheduled generating unit* or *semi-scheduled generating unit*, except: (1) in accordance with the *self-commitment* procedures specified in clause 4.9.6 ~~up to the *self-dispatch level*~~; (2) in accordance with a *dispatch instruction*; (3) as a consequence of operation of the *generating unit's* automatic *frequency response mode* to *power system* conditions; (4) in response to remote control signals given by *NEMMCO* or its agent; or (5) in connection with a test conducted in accordance with the requirements of this Chapter or Chapter 5;	Disagree with the broad nature of this clause – self-commitment clauses need fixing as per our comments. Request insertion of 4.9.4(a1). The power system security powers seem to be over writing the aim of the rule changes. No justification for this. In 4.9.4 (a1) (1) – it is precisely the self-dispatch level to which the semi-scheduled unit will be operating at all times unless under a semi-dispatch interval flag and dispatch cap! Insert (4) as this is also the core of the intention of this rule change.	Request: 4.9.4(a) A *Scheduled Generator* must not, unless in the *Scheduled Generator's* reasonable opinion public safety would otherwise be threatened or there would be a material risk of damaging equipment or the environment: (a) send out any *energy* from a *scheduled generating unit* ~~or *semi-scheduled generating unit*~~, except: (1) in accordance with the *self-commitment* procedures specified in clause 4.9.6 up to the *self-dispatch level*~~;~~ (2) in accordance with a *dispatch instruction*; (3) as a consequence of operation of the *generating unit's* automatic *frequency response mode* to *power system* conditions; (4) in response to remote control signals given by *NEMMCO* or its agent; or (5) in connection with a test conducted in accordance with the requirements of this Chapter or Chapter 5; **Request: 4.9.4(a1)** A *Semi-Scheduled Generator* must not, unless in the *Semi-Scheduled Generator's* reasonable opinion public safety would otherwise be threatened or there would be a material risk of damaging equipment or the environment: (a) send out any *energy* from a *semi-scheduled generating unit* ~~or *semi-scheduled generating unit*~~, except: (1) in accordance with the *self-commitment* procedures specified in clause 4.9.6 up to the *self-dispatch level*; (2) in accordance with a *dispatch instruction* during a *semi-dispatch interval*;

		(3) as a consequence of operation of the *semi-scheduled generating unit's* automatic *frequency response mode* to *power system* conditions; (4) at any level up to *maximum availability* during ~~in response to remote control signals designating the period~~ a *non semi-dispatch interval* ~~given by *NEMMCO* or its agent~~; or (5) in connection with a test conducted in accordance with the requirements of this Chapter or Chapter 5;
4.9.4(b) adjust the *transformer tap position* or *excitation control system voltage* set-point of a *scheduled generating unit* or *semi-scheduled generating unit* except: (1) in accordance with a *dispatch instruction*; (2) in response to remote control signals given by *NEMMCO* or its agent; (3) if, in the ~~*Scheduled*~~ *Generator's* reasonable opinion, the adjustment is urgently required to prevent material damage to the ~~*Scheduled*~~ *Generator's plant* or associated equipment, or in the interests of safety; or (4) in connection with a test conducted in accordance with the requirements of clause 5.7;	Disagree – this must be left in the domain of the scheduled generation – there is no method proposed within this set of rule changes by which a semi-scheduled generating unit will know that it has to obey a dispatch instruction for an on behalf of a requirement to change transformer taps – or voltage set points if it is outside a semi-dispatch interval– This was not discussed in the reference group. NEMMCO have made no case for this in the Request for Rule change, section 7.1 only discusses the need to control output to ensure that the dispatch remains with secure limits. The intention was always to provide NEMMCO with a method to control the network power flows during periods of network congestion. This requirement exceeds this and forces a layer of operational control (personnel) onto what are normally automated generation systems. There is no cost justification assessment in section 8 on adding in the "plant control room'-	Request 4.9.4(b) adjust the *transformer tap position* or *excitation control system voltage* set-point of a *scheduled generating unit* ~~or *semi-scheduled generating unit*~~ except: (1) in accordance with a *dispatch instruction*; (2) in response to remote control signals given by *NEMMCO* or its agent; (3) if, in the *Scheduled Generator's* reasonable opinion, the adjustment is urgently required to prevent material damage to the *Scheduled Generator's plant* or associated equipment, or in the interests of safety; or (4) in connection with a test conducted in accordance with the requirements of clause 5.7;

	(24x7 operational control) it discusses market bidding and trading systems (already a 24x7 added cost)– the implications of this clause to the operating requirements of a semi-scheduled generating unit has not been assessed or evaluated by NEMMCO in this request- it is a significant deviation from the objective and scope of the rule change. This would also make small distribution (under 100kV) connected (30 – 100MW) wind farms unviable – this is another example of a barrier to entry. Voltages at the connection point are usually required to remain within a tight tolerance particularly in under 100kV connections. There **are no** *excitation control system*s on wind turbines.	
4.9.4 (c) *energise* a *connection point* in relation to a *scheduled generating unit* or *semi-scheduled generating unit* without obtaining prior approval from *NEMMCO* ~~. This approval must be obtained~~ immediately prior to *energisation*;	Agree – although with 30MW distributed generation this is usually via the NSP..	
(d) *synchronise* to, or *de-synchronise* from, the *power system* a *generating unit* with a *nameplate rating* of 30MW or more that is classified as a *scheduled generating unit* or a *semi-scheduled*	Agree – but this is an over kill for wind farms, if there is no wind it will still be 'energised' and hence synchronised.	

generating unit ~~*synchronise a scheduled generating unit* to, or *de-synchronise a scheduled generating unit* from, the *power system*~~ without prior approval from *NEMMCO* or other than in response to a *dispatch instruction* except *de-synchronisation* as a consequence of the operation of automatic protection equipment or where such action is urgently required to prevent material damage to *plant* or equipment or in the interests of safety;		
4.9.4 (e) change the *frequency response mode* of a *scheduled generating unit* or *semi-scheduled generating unit* without the prior approval of *NEMMCO*; or	Disagree – this is over and above that agreed in the performance standards. These changes were intended for wind generation – by definition in Chapter 10 wind turbines do not have a "frequency response mode" – they simply follow the system frequency. Wind turbines do not automatically change their generated power when the power system frequency changes. Changes to frequency protection settings are managed under the technical standards – this clause is unnecessary and infers a control function that does not exist.	(e) change the *frequency response mode* of a *scheduled generating unit* ~~or *semi-scheduled generating unit*~~ without the prior approval of *NEMMCO*; or
(f) remove from service or interfere with the operation of any *power system* stabilising equipment installed on a ~~that~~ *scheduled generating unit* or *semi-scheduled generating unit*.	Very broad use of this clause - This clause is intended to refer to **power system stabiliser** control functions on large thermal machines that can cause power system oscillations. Wind turbines do not have PSS's, neither do run of river hydro machines. Again a	

	broad interpretation of the scope of work. Operating conditions with a static var compensator or Statcon out of service are generally negotiated in the performance standards or connection agreement. Chapter 5 deals with control and stability in a much clearer fashion.	
4.9.5(a) A *dispatch instruction* for a *scheduled generating unit*, a *dispatch instruction* for a *semi-scheduled generating unit*, a *dispatch instruction* for a *scheduled network service* and a *dispatch instruction* for a *scheduled load* ~~(including aggregated *generating units*, *scheduled network services* or *scheduled loads* as described in clause 3.8.3)~~ must include the following: (1) specific reference to the *scheduled generating unit* ~~(including any aggregated *scheduled generating unit*)~~, *semi-scheduled generating unit* ~~(including any aggregated *semi-scheduled generating unit*)~~, *scheduled network service* or *scheduled load* or other *facility* to which the *dispatch instruction* applies; (2) the desired outcome of the *dispatch instruction* such as *active power*, *reactive power*, *transformer* tap or other outcome; (3) in the case of a *dispatch instruction* under clause 4.9.2, the *ramp rate* (if applicable) which is to be followed by	Disagree with 4.9.5 (2) – Please note that NEMMCO **is not using the current NER in this document** as it is impossible to have ~~(including any aggregated *semi-scheduled generating unit*)~~, (highlighted) in a current NER clause. Should we question if we are looking at the correct version of the changes? What other words have slipped in that are not part of the current NER version 14?	Suggest 4.9.5 (2) the desired outcome of the *dispatch instruction* to a *scheduled generating unit* such as *active power*, *reactive power*, *transformer* tap or other outcome; (2a) to a *semi-scheduled generating unit* the desire outcome of the *dispatch instruction* during a *semi-dispatch interval* such as *active power*.

the *generating unit* or a specific target time to reach the outcome specified in the *dispatch instruction*; (4) the time the *dispatch instruction* is issued; and (5) if the time at which the *dispatch instruction* is to take effect is different from the time the *dispatch instruction* is issued, the start time; and (6) in the case of a *dispatch instruction* for a *semi-scheduled generating unit*: (i) a notification as to whether the *dispatch interval* to which the *dispatch instruction* relates is a *semi-dispatch interval* or a *non semi- dispatch interval*; and (ii) the *dispatch cap*.		
4.9.6	This clause has no written explanation given in the Request for Rule Change – table in the document is vague and does not explain the secondary and how it relates to the intention and objective of this rule change.	
4.9.6 (a) (1)	Agree – but note that synchronisation is closure of the connection point cb.	
4.9.6 (a) (2) *NEMMCO* may require t~~T~~he ~~*Scheduled*~~ *Generator* ~~must~~ to advise *NEMMCO* when a *scheduled generating unit* or *semi-scheduled generating unit* reaches the *self-dispatch level* (being a *self-dispatch level* that is greater than zero MW) and	Disagree – this is pointless and undermines the whole point of this set of rule changes. 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 due to a network constraint – this	Request 4.9.6(a)(2) *NEMMCO* may require the *Scheduled Generator* to advise *NEMMCO* when a *scheduled generating unit* ~~or *semi-scheduled generating unit*~~ reaches the *self-dispatch level* (being a *self-dispatch level* that is greater than zero MW) and must not increase output above that level unless instructed otherwise by *NEMMCO* to increase output or unless the increase in output results from

must not increase output above that level unless instructed otherwise by *NEMMCO* to increase output or unless the increase in output results from the *generating unit* being placed under remote control to be loaded in accordance with Chapter 3.	clause is unnecessary – all semi-scheduled generation will be operated at a **whatever level is possible given the wind conditions** (this may or may not equal the self dispatch level) that level is less than or equal to the capacity of the semi-scheduled generating unit) unless under a dispatch cap during a semi-dispatch interval. NEMMCO have automated receipt of actual wind farm generation.	the *scheduled generating unit* being placed under remote control to be loaded in accordance with Chapter 3.
4.9.6(b) Instructions by NEMMCO to commit a generating unit for service (1) A *dispatch instruction* for a *scheduled generating unit* or *semi-scheduled generating unit* to commit given by NEMMCO in response to a *dispatch offer* must be consistent with the start-up time specified in the latest *dispatch offer* in relation to the *generating unit*. (2) When *NEMMCO* issues a *dispatch instruction* ~~to~~ for a *scheduled generating unit* or *semi-scheduled generating unit* for to commit~~ment~~, *NEMMCO* must nominate the time at which the *generating unit* is to be *synchronised*. (3) After a *dispatch instruction* for *commitment* of a *scheduled generating unit* or *semi-scheduled generating unit* has been issued, the relevant ~~*Scheduled*~~ *Generator* must promptly advise	Actually illogical to apply to semi-scheduled generation as it infers that the dispatch instruction is being obeyed.. which by definition for a semi-scheduled generating would mean that it is being dispatched under a semi-dispatch interval ?? Is this being constrained on?? – Also seems that only gas generators can meet this start up profile. Typical again of this rule drafting… making intermittent generation fit the two existing profiles in the dispatch box – slow or fast start up .. wind generation is unlikely to conform easily to either of them but no attempt has been made to allow a new structure for commitment in the market. Also this clause infers that NEMMCO is instructing single generating units when to commit – not something that would be fun for a wind farm group of units.	(4) Unless instructed otherwise by *NEMMCO*, at the time a *dispatch instruction* to commit takes effect, the relevant *scheduled generating unit* ~~or *semi-scheduled generating unit*~~ must remain on *self-dispatch level* until *NEMMCO* issues a further *dispatch instruction*. (5) If *NEMMCO* has declared the *dispatch interval* following the commitment of a *semi-scheduled generating unit* to be *semi-dispatch interval*, unless instructed otherwise by *NEMMCO*, at the time a *dispatch instruction* to commit takes effect, subject to energy availability the relevant *semi-scheduled generating unit* must remain on *self-dispatch level* until *NEMMCO* issues a further *dispatch instruction* or declares the next *trading interval* to be a *non-semi-scheduled dispatch interval*.

NEMMCO of any inability to meet the nominated time to *synchronise*. (4) Unless instructed otherwise by *NEMMCO*, at the time a *dispatch instruction* to commit takes effect, the relevant *scheduled generating unit* or *semi-scheduled generating unit* must remain on *self-dispatch level* until *NEMMCO* issues a further *dispatch instruction*.		
4.9.7 (a) In relation to a ~~any~~ *scheduled generating unit* of *nameplate rating* of 30 MW or more that is classified as a *scheduled generating unit* or a *semi-scheduled generating unit*, the ~~*Scheduled*~~ *Generator* must confirm with *NEMMCO*, in accordance with clause 3.8.18(b1), the expected *de-synchronising* time at least one hour before the expected actual *de-synchronising* time, and update this advice 5 minutes before *de-synchronising* unless otherwise agreed with *NEMMCO*. *NEMMCO* may require further notification immediately before *de-synchronisation*.	Agree- the intention is to capture the periods when the whole semi-scheduled generating unit is to be off line.	
4.9.7(b) The *Scheduled Generator* or *Semi-Scheduled Generator* must not *de-commit* a *generating unit* with a *nameplate rating* of 30 MW or more unless it has confirmed with	Disagree: this clause is again drafted without recognition of the collective. It is reasonable to request large semi-scheduled generating units to ramp down and come off in a controlled manner, however this is excessive for 30MW wind farms	Change to: 4.9.7(b) The *Scheduled Generator* or *Semi-Scheduled Generator* must not *de-commit* a *generating unit* with a *nameplate rating* of 30 MW or more unless it has confirmed with *NEMMCO*: (1) the time to commence decreasing the output of the

NEMMCO: (1) the time to commence decreasing the output of the *generating unit*; (2) the *ramp rate* to decrease the output of the *generating unit*; (3) the time to *de-synchronise* the *generating unit*; and (4) the output from which the *generating unit* is to be *de-synchronised*.	(most likely to be averaging 10MW)– either delete these requested changes or adopt the changes suggested. As the wind will dictate the roll off of a semi-scheduled generating unit – proposing a ramp down value should be subject to energy availability.	*scheduled generating unit or semi-scheduled generating unit*; (2) the *ramp rate* to decrease the output of the *scheduled generating unit*; (3) the time to *de-synchronise* the *scheduled generating unit or semi-scheduled generating unit*; and (4) the output from which the *scheduled generating unit or semi-scheduled generating unit* is to be *de-synchronised*.
4.9.8	Agree	
4.9.9	Fiddling of an editor obsessed with Microsoft's grammatical editing.	
4.9.9 A	Same as above – change for change sake	
4.9.9 B	Same as above – change for change sake	
4.9.9 C A *Semi-Scheduled Generator* must notify *NEMMCO* without delay of any event that has changed or is likely to change the operational availability of any of its *semi-scheduled generating units*, whether the relevant *generating unit* is *synchronised* or not, as soon as the *Semi-Scheduled Generator* becomes aware of the event.	Disagree- again this refers to the single unit when it should refer to the collective.	Request: 4.9.9 C A *Semi-Scheduled Generator* must notify *NEMMCO* without delay of any event that has changed or is likely to change the operational availability of ~~any of~~ its *semi-scheduled generating units*, whether the relevant *semi-scheduled generating unit* is *synchronised* or not, as soon as the *Semi-Scheduled Generator* becomes aware of the event.
4.11.1	Agree	
5.7.7(d)	Agree	
S5.2.5.11	PROBLEM – this clause requires a clarification statement at the lead into it. A generating system in the technical standards refers to a collection of generating units. However the market use in Chapter 3 creates a situation where the semi-	

	scheduled generating unit in Ch3 is in fact the equivalent of the generating system in the technical standards. A semi-scheduled generating system is the aggregation of several semi-scheduled generating units. **THIS IS NOT THE SAME AS THE GENERATING SYSTEM AS IT IS DEFINED IN CHAPTER 5**. Technically I am not sure how this standard can be applied to the aggregation of several semi-scheduled generating units.	
S5.2.5.11(5)	Agree – understood to be for the collective – ie in accordance with the definition in Ch2.2.2A "a group of generating units"	
S5.2.5.11(a)(6) maximum operating level	Disagree – Needs clarification. Here the semi-scheduled generating system is referring to the aggregation of semi-scheduled generating units… a collective of collectives..	(6) a *semi-scheduled generating system*, the combined maximum *sent out generation* (but not emergency *generation*) of its in-service aggregated *semi-dispatch generating units,* consistent with its *registered bid and offer data*.
S5.2.5.11(a)(5) minimum operating level (5) a *semi-scheduled generating unit*, the minimum *sent out generation* for continuous stable operation consistent with its *registered bid and offer data*; and	Disagree: The concept of 'continuous stable operation' for a minimum level is a function of boiler stability in large thermal plant – applying this to the semi-scheduled generating units which have to be by definition 'intermittent' reveals the lack of consideration for the various technologies for which we are trying to draft these rules. This is related back to the copy created in Schedule 3.1	(5) a *semi-scheduled generating unit*, the minimum *sent out generation* ~~for continuous stable operation~~ consistent with its *registered bid and offer data*; and
S5.2.5.11(a)(6) minimum operating level	Disagree – Needs clarification. Here the semi-scheduled generating system is referring to the	(6) a *semi-scheduled generating system*, the combined minimum *sent out generation* of its in-service aggregated

(6) a *semi-scheduled generating system*, the combined minimum *sent out generation* of its in-service *generating units,* consistent with its *registered bid and offer data*.	aggregation of semi-scheduled generating units… a collective of collectives..	*semi-scheduled generating units,* consistent with its *registered bid and offer data*.
S5.2.5.11 (e) The *negotiated access standard* must record the agreed values for maximum operating level and minimum operating level, and where relevant the method of determining the values such that those ~~and the~~ values for a *generating system* must take into account its in-service *generating units*.	Disagree: The wording of this standard was agreed and gazetted on 15 March 07 – This alters the clause to make it solely refer to the generating system… where as leaving "and the" in place allows it to be for either a single unit or a collective.	Request: S5.2.5.11 (e) The *negotiated access standard* must record the agreed values for maximum operating level and minimum operating level, and where relevant the method of determining the values ~~such that those~~ and the values for a *generating system* must take into account its in-service *generating units*.
S5.2.5.11(c) Minimum Access standard	Requires clarification: Use of 'generating system" in this clause must be back to the single wind farm level.	
S5.2.5.14(a) automatic access standard (2) subject to the energy source availability, for a *non-scheduled generating unit* or *non-scheduled generating system*: (i) automatically reducing or increasing its *active power* output within 5 minutes, at a constant rate, to or below the level specified in an instruction electronically issued by a *control centre*, subject to subparagraph (iii), (ii) automatically limiting its *active power* output, to below the level specified in subparagraph (i); and	Disagree: the Automatic standard for non-scheduled generating systems has been negotiated during the technical standard consultation- this was specified and gazetted for **wind farms**. This rule change is OVERWRITING the standard as it was agreed in March without justification. The non-scheduled automatic standard should be equivalent for the semi-scheduled. There is no justification for lifting this standard and requiring the 'linear ramping" this is dealt with through causer pays. In the context of a semi-scheduled generating unit what is "from one *dispatch* level to another"	Request (2) subject to ~~the~~ energy source availability, for a *non-scheduled generating unit, semi-scheduled generating unit,* ~~or~~ *non-scheduled generating system* or *semi-scheduled generating system*: (i) automatically reducing or increasing its *active power* output within 5 minutes, at a constant rate, to or below the level specified in an instruction electronically issued by a *control centre*, subject to subparagraph (iii), (ii) automatically limiting its *active power* output, to below the level specified in subparagraph (i); and (iii) not changing its a*ctive power* output within 5 minutes by more than the raise and lower amounts specified in an instruction electronically issued by a *control centre*.

(iii) not changing its a*ctive power* output within 5 minutes by more than the raise and lower amounts specified in an instruction electronically issued by a *control centre*. (3) subject to energy source availability, for a *semi-scheduled generating unit* or, if subject to aggregation approved by *NEMMCO* under clause 3.8.3, an aggregated *semi-scheduled generating system*: (i) automatically reducing or increasing its *active power* output within five minutes, at a constant rate, to or below the level specified in an instruction electronically issued by a *control centre*, subject to subparagraph(iii), (ii) automatically limiting its *active power* output, to or below the level specified in subparagraph (i); (iii) not changing its *active power* output within five minutes by more than the raise and lower amounts specified in an instruction electronically issued by a *control centre*; and (iv) ramping its *active power* output linearly from one *dispatch* level to another.	given that there is only an obligation to limit active power output during a semi-dispatch interval?	Request DELETE (3)
S5.2.5.14 (b)(3) subject to energy source availability, for a *semi-scheduled generating unit* or, if subject	Disagree – the proposition does not acknowledge the difference between the Automatic and the MINIMUM standard. They have simply created	S5.2.5.14(b)(3) subject to energy source availability, for a *semi-scheduled generating unit* or, if subject to aggregation approved by *NEMMCO* under clause 3.8.3, an aggregated

to aggregation approved by *NEMMCO* under clause 3.8.3, an aggregated *semi-scheduled generating system*: (i) automatically reducing or increasing its *active power* output within five minutes, at a constant rate, to or below the level specified in an instruction electronically issued by a *control centre*, subject to subparagraph(iii), (ii) automatically limiting its *active power* output, to or below the level specified in subparagraph (i); and (iii) not changing its *active power* output within five minutes by more than the raise and lower amounts specified in an instruction electronically issued by a *control centre*.	a copy. A minimum standard should not insist on the constant rate – this is unlikely to be possible with some technologies. At the minimum standard "the constant rate" should not be mandated, 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. Also given the obligations of a semi-scheduled generating unit how is the "minimum standard" still referring to instructions electronically issued by a control centre – when in fact they mean a "*dispatch instruction*" The concept of "automatically" increasing generation is contradictory to intermittent generation. Suggest simplification in line with the minimum standard for scheduled generation. A minimum standard need not be so prescriptive – it isn't for scheduled generation.	*semi-scheduled generating system*: changing its *active power* output in accordance with *dispatch instructions* issued during *semi-dispatch intervals.*
S.5.2.6 (a) automatic standard	Agree – but now generating system usage changes again! (Would hate to have English as a second language!)	
S5.2.6 (b) The quantities referred to under paragraph (a) that *NEMMCO* may request include: (1) in respect of a ~~*scheduled generating*~~	**Disagree** this drafting is a mess. – note here the drafting has changed to use (aggregate) generating system – perhaps in reference to either semi-scheduled or scheduled generating	Recommend: S5.2.6 (b) The quantities referred to under paragraph (a) that *NEMMCO* may request include: (1) in respect of a *scheduled generating unit*:

~~*unit* or *non-scheduled*~~ *generating unit* with a *nameplate rating* of 30 MW or more, and a *scheduled generating unit or semi-scheduled generating unit* not part of an aggregate approved by *NEMMCO* under clause 3.8.3: (i) current, *voltage*, *active power* and *reactive power* in respect of *generating unit* stators or power conversion systems (as applicable); (ii) the status of all switching devices that carry the *generation*;, and (iii) *tap-changing transformer* tap position; ~~and~~ ~~(iii) aggregate *active power* if subject to aggregation approved by *NEMMCO* under clause 3.8.3;~~ (2) in respect of a *non-scheduled generating system* that includes a *generating unit* with a *nameplate rating* of less than 30 MW, or a *generating system* that is an aggregate approved by *NEMMCO* under clause 3.8.3: (i) its connected status, *tap-changing transformer* tap position and *voltages*; (ii) *active power* and *reactive power* aggregated for groups of identical *generating units*; and (iii) either the numbers of identical *generating units* operating or the operating status of each non-identical *generating unit*; and	systems… Just another twist on a theme. Providing NEMMCO with the "semi-scheduled generating units' current, voltage, active power and reactive power in respect of **generating unit stators** is contradictory to the definition in 2.2.2A So does a "semi-scheduled generating unit" – which is made up of a "group of generating units" need to be aggregated or not.. seems to me that NEMMCO hasn't figured this out and it has never been really clear what they mean. Frankly these clauses don't work for what has been defined earlier.	(i) current, *voltage*, *active power* and *reactive power* in respect of *generating unit* stators or power conversion systems (as applicable); (ii) the status of all switching devices that carry the *generation*;, and (iii) *tap-changing transformer* tap position; (2) in respect of a *non-scheduled generating system* or *semi-scheduled generating unit*: (i) its connected status, *tap-changing transformer* tap position and *voltages*; (ii) *active power* and *reactive power* at the *connection point*; and (iii) either the numbers of identical *generating units* operating or the operating status of each non-identical *generating unit*; (3) in respect of aggregated *scheduled generating systems* or aggregated *semi-semi-scheduled generating systems*: (i) for each *generating unit* or *generating system*, Their connected status, the *tap-changing transformer* tap position and *voltages*; (ii) *active power* and *reactive power* at the *generating unit* or the *connection point*; and (iii) either the numbers of identical *generating units* operating or the operating status of each non-identical *generating unit*;

(iv) aggregate *active power* and *reactive power* for an aggregated *generating system* approved by *NEMMCO* under clause 3.8.3;		
(automatic standard) (5) in respect of a wind farm type of *generating system*: (i) wind speed; (ii) wind direction; and (iii) ambient temperature; and	Reckon this drafting of both the automatic and the minimum standard undermines the efforts to achieve wind information for the AWEFS. Clause (b)(5) and (c)(7) remains using **generating system** as it was intended during the technical standards rule change.. but in the definitions for this clause it has been altered to suit the semi-schedule definition of generating system.. they are not compatible.	
S5.2.6 (c)Minimum Standard	ISSUE – maybe at last the use of the various definitions has settled.	
8.2.1	Agree	
Chapter 10		
Available capacity	Agree	
Central dispatch	Agree if corrections are made to 3.8	
Directed Participant	Agree	
dispatch	Agree	
dispatch cap	Disagree, maximum permissible generation is only capped during a semi-dispatch interval – the maximum permissible generation is otherwise the *available capacity*.	**dispatch cap** The amount of electricity specified in a *dispatch instruction* during a *semi-dispatch interval* as the *semi-scheduled generating unit's* maximum permissible *generation* at the target time specified in that *dispatch instruction.*

Dispatch inflexibility profile	Agree – but again there are a only two profiles.	
dispatch offer price	Agree	
dispatched generating unit	agree	
energy constrained semi-scheduled generating unit	Agree – this would be required for run of river hydros. Etc	
generation dispatch offer	agree	
	INSERT – This captures the small units stated below, and still uses the technical standards drafting on generating system.	***generating system of identical generating units*** A system comprising one or more *identical generating units* and includes auxiliary or *reactive plant* that is located on the *Generator's* side of the *connection point* and is necessary for the *generating system* to meet its *performance standards*."
	INSERT – the aim is to capture small units that are electrically such that they are usually lumped in a model. Where the variance of the machine impedances are too small to be significant.	***identical generating units*** Multiple *generating units* each of the same manufactured model number, the same nameplate rating and where the electrical performance can be assessed through a lumped dynamic model. The *nameplate rating* on each *generating unit* must be less than or equal to 5MW.
Inflexible, inflexibility	agree	
loading price	agree	
	INSERT – this is a difficult term to define there may be a better way of do this. Unique may be too detailed. As units increase in size their impedances differ enough to matter in modelling, when they are small they are generally taken to be the same as the manufacturer states on a single certificate. This is when NEMMCO would want detailed data on each unit rather than a single representative model.	***non-identical generating units*** *generating units* with different *nameplate ratings* or the electrical parameters of the individual *generating units* are unique.
non-semi-dispatch interval	Agree – this term should be used in several places	

	help clarify what is intended.	
off-loading price	agree	
PASA availability	agree	
registered bid and offer data	Agree if comments on Schedule 3.1 taken into account.	
renewable energy benefits	INSERT	For the purposes of Rule 3.15, the benefits contracted by a renewable generator in relation to the various jurisdictional schemes to promote renewable generation or reduce the production of greenhouse gases. The schemes include but are not limited to: • Renewable Energy Credits, from all sources; and • NSW Greenhouse Gas Abatement Credits.
restriction offer	agree	
scheduled plant	agree – only used in relation to 4.8.9 (a1)(1)	
semi-dispatch interval	Agree please ensure dispatch cap is consistently adjusted to reflect the intention	
semi-scheduled generating system: A *generating system* comprising *semi-scheduled generating units*	Disagree – if NEMMCO really meant this then why didn't the whole rule change refer to a semi-scheduled generating system? Because that is what is going to be in the dispatch system. Suggest that only when wind farms are aggregated – across areas then this applies.	Request A *generating system* comprising *semi-scheduled generating units* aggregated and approved by *NEMMCO* under clause 3.8.3.
semi-scheduled generating unit	Agree	
Semi-Scheduled Generator	Agree	
statement of opportunities	agree	
unconstrained intermittent generation forecast	Disagree – use of generating unit here are trying to a wind farm forecast – this is not at the unit level.	**Request** **unconstrained intermittent generation forecast** The forecast prepared by *NEMMCO* of a *semi-scheduled*

		generating unit's generation for the relevant time, determined: (a) from forecasts of the energy available for input to that *semi-scheduled generating unit's* electrical power conversion process; and (b) on the assumption that there are no *network constraints* otherwise affecting the *generation* from that *semi-scheduled generating unit*.
Chapter 11	Auswind supports including transitional arrangements as part of the proposed rules to prevent retrospective application of regulatory requirements, which would increase sovereign risk and promote investment uncertainty. We believe that, once a project is committed, a participant is entitled to rely on a stable regulatory environment while completing the project.	
11.11.1 In rule 11.11: **Amending Rule** means the National Electricity Amendment (Semi-Dispatch of Significant Intermittent Generation) Rule 2007. **classified generating unit** means a *generating unit* for which *NEMMCO* approved a classification under clause 2.2.2 or clause 2.2.3 before the *commencement date*. **commencement date** means the date		

on which the *Amending Rule* commences operation. **existing generating unit** means 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.		
11.11.2	Agree	
11.11.3	Agree – there will be enough costs to digest!	
11.11.4	Agree	

AUSWIND NEM Technical Committee

Kate Summers,	Pacific Hydro
Alex Cruickshank,	AGL
Andrew Jones	Roaring 40s
Dominique La Fontaine,	Auswind
Jacob Perahia,	Vestas
Jonathan Carboon,	Vestas
Martin Cottrell	Garrad Hassan
Michael Vawser,	Wind Prospect
Paul Fulton,	Roaring 40's
Peter Calderwood	Trust power
Peter Cowling	Suzlon
Peter Wallace	
Rob Jackson	REGA
Robert Holmes	Econnect
Rodney Ahern	Trust power
Terry Johannesen	Stanwell