

**Sebastien Henry**  
**Australian Energy Market Commission**  
**PO Box A2449**  
**Sydney South NSW 1235**

**By online submission**

**9 October 2014**

Dear Mr Henry,

**Draft Rule Determination: Generator Ramp Rates and Dispatch Inflexibility in Bidding – Project ERC0165**

AGL Energy Ltd (**AGL**) welcomes the opportunity to make a submission on the Australian Energy Market Commission's (**AEMC**) *Draft Rule Determination: National Electricity Amendment (Generator ramp rates and dispatch inflexibility in bidding) Rule 2014 (Draft Determination)*. AGL operates a range of generation assets, including thermal coal and gas, wind and hydro, providing direct experience with the differing technical limitations affecting the safe and reliable operation of such plant.

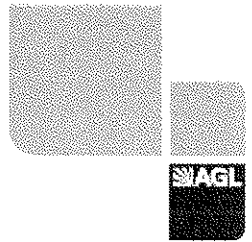
AGL endorses the objective of the rule change, namely to promote a ramp rate and dispatch inflexibility framework that ensures system security and the efficient dispatch of generation in the National Electricity Market (**NEM**). AGL also supports the AEMC's finding that requiring generators to at all times specify the maximum technical ramp rate that their generating plant can safely achieve would impose an undue administrative and operational burden and, given the many factors influencing a safe maximum ramp rate at a point in time, would lead to uncertainty in compliance with the National Electricity Rules (**NER**). Moreover, the rule change originally proposed failed to sufficiently recognise the significant operational and maintenance costs involved in always running plant at the technical maximum ramp rate.

The AEMC's preferred draft rule would require generators to offer up ramp rates of at least one percent of their maximum generation capacity (as provided in accordance with schedule 3.1) on a MW/minute basis. Although the AEMC's alternative rule proposal has the benefit of simplicity, some of AGL's generating plant (in particular, Bayswater and Liddell) would be unable to sustain this proposed ramp rate even under normal conditions – at least, not without causing a substantial increase in maintenance costs and risking plant availability. The primary technical issue at Liddell and Bayswater is the use of relatively lower grade black coal with a changed composition and higher ash content compared to previous years. Although the stations can adequately handle the consumption of the current and future coal, it does affect some of the operating parameters, boiler firing rate being one of them.

The maintenance issues likely to be encountered at Bayswater and Liddell at the ramp rates that would be required by the AEMC's preferred draft rule include:

- increased boiler tube leaks due to increased thermal stress caused by boiler over firing during the higher ramp up conditions;
- increased risk of unit trips in both the output increase or decrease ramping modes;

- increased failure rates of high pressure and low pressure heaters with a flow on impact to unit efficiency and a faster deterioration in operating life; and
- increased mill grind out frequencies with units requiring intra-day grind outs to maintain higher loading during super peak periods, which would be expected to often occur at inconvenient times.



Accordingly, in order to be practically workable and avoid the imposition of inefficient and avoidable maintenance costs, the revised rule would need to permit a generator to rely on an alternative, pre-agreed maximum ramp rate (that is, other than that set out in its schedule 3.1) where technical grounds would frequently prevent it from attaining the proposed one percent ramping rate. Allowing a standing technical exemption such as this could avoid the need for some generators to effectively provide a 'brief and verifiable' reason for a lower ramp rate with every bid made, while enabling them to still perform to a higher ramping capability when favourable plant conditions exist thereby benefitting system security and reliability. Although AGL considers a technical exemption process necessary to reduce the overall compliance burden that would otherwise flow from the revised rule, we note it would come with its own costs to participants associated with the further detailed assessments required to ensure a suitable standing number.

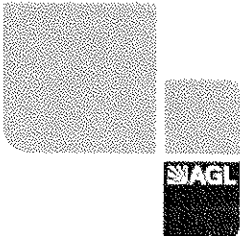
It seems likely that other thermal generators in the NEM would encounter similar issues with a one percent maximum generation capacity ramping requirement as would be faced by Bayswater and Liddell. The implication is that the increase in ramping capability that has been assumed would result from the AEMC's preferred rule is overstated in Table 4.2 of the Draft Determination. Although the theoretical result is an overall increase in ramping capability, given the practical operational and technical constraints that would be faced by the generators expected to deliver a large proportion of this increase, the real increase is likely to be substantially lower. Furthermore, as against the existing regime, the AEMC's preferred rule would generally reduce the ramping obligations of the flexible hydro and gas-fired generators that are technically most suited to provide such capability. AGL would appreciate seeing a revision of Table 4.2 by the AEMC which compares the 'theoretical' ramp rate capability flowing from its preferred rule change with the 'likely' ramp rate capability derived from information provided by participants.

The desirability of the AEMC's preferred draft rule is also negatively impacted by the fact that, although it would lead to slightly greater ramping capability being available in the NEM overall, our own analysis (shown in the table below) indicates that there would be a negative change in ramping capability in South Australia and Tasmania. Given the high proportion of wind generation in South Australia, we would be very cautious about supporting a rule change that would reduce that region's ramping capability. In reality, the AEMC's preferred rule would lead to greater ramping capability in the regions which are least likely to experience system security issues.

#### Summary impact of AEMC's preferred rule

	Current	Proposed	Change	Change %	No of Units	Ave of Current	Ave of Proposed	Change in Ave
Qld	137	149	12	9%	51	2.7	2.9	0.2
NSW	102	153	51	50%	40	2.6	3.8	1.3
Vic	133	150	17	13%	49	2.7	3.1	0.3
SA	93	67	-26	-28%	39	2.4	1.7	-0.7
Tas	66	40	-26	-39%	26	2.5	1.5	-1.0
Total	531	559	28	5%	205	2.6	2.7	0.1

We also note that, despite the AEMC's preferred rule change performing somewhat better on consistency and proportionality grounds than the existing regime, the mechanism to round-up to the nearest whole MW/minute means that non-aggregated generators still bear a disproportionate burden of system ramp rate capability compared to equally sized aggregated unit stations. This is illustrated in the following revision of the Draft Determination's Table 4.1:



**Table 4.1 revised to consider unit size**

	<b>Generator A</b>	<b>Generator B</b>	<b>Generator C</b>
Max. capacity	1500 MW	1500 MW	1500 MW
No. of generating units	4	4 (aggregated)	6
<b>Unit Size*</b>	<b>375</b>	<b>375</b>	<b>250</b>
Min. ramp rate (current)	12 MW/min	3 MW/min	18 MW/min
Min. ramp rate (more preferable draft rule)	16 MW/min	15 MW/min	18 MW/min

*\*Assumes all units for each individual generator are of equal size.*

As suggested by AGL and others in submissions to the Consultation Paper, an alternative potential rule change would be to apply the existing minimum ramp rate rule provisions at the physical unit as opposed to the current registered unit level. This is a simple solution which would provide efficiency benefits over the existing regime, as well as over the regime proposed by the AEMC, by improving overall ramping capability in the NEM *in all regions*. It would avoid the substantial administrative effort associated with generators applying for, and AEMO assessing, technical derogations from the rule (assuming such derogations would be permitted). Arguably it also performs better on equity grounds with consistent treatment of aggregated and non-aggregated units alike. We would strongly urge the AEMC to reconsider this as a practical alternative approach.

Should you have any questions in relation to this submission please contact Eleanor McCracken-Hewson, Wholesale Market Advisor, on (03) 8633 7252 or at [EHewson@agl.com.au](mailto:EHewson@agl.com.au).

Yours sincerely,

*per.* Duncan MacKinnon

**Manager Wholesale Markets Regulation**

