

# Summary of Meeting and Actions

---

Meeting Name	Rated MW Working Group
Meeting No.	3
Date of Meeting	Tuesday, 29 <sup>th</sup> January 2008
Time	10:00am – 2:00pm
Venue	B2-1, National Grid House, Warwick

---

This note outlines the key action points from the third meeting of the Rated MW Working Group.

## 1) Minutes from Previous Meeting

The draft minutes of the Grid Code Rated MW Working Group meeting held on 28<sup>th</sup> September 2007 were APPROVED, subject to minor amendments and will be accessible from the Grid Code Website.

## 2) Working Group's Scope

The Working Group noted that the Grid Code was currently silent on the Mvar provision of a Generating Unit, if that unit was operating above or below Rated MW. National Grid had expressed concerns regarding the potential implications on the GB Transmission System (planning and operational timescales) of Generating Units exceeding their Rated MW e.g. planning assumption incorrect, management of the GB Transmission System more complex within operational timescales.

The Working Group noted that a study completed by National Grid, on behalf of the Working Group, had concluded that a 10% increase in output above Rated MW would result in significant investment in the appropriate compensation equipment. The Working Group noted that 5% increase in output above Rated MW would result in a slight increase in investment expenditure required to offset the additional MWs and loss of generating unit Mvar on the GB Transmission System.

The Working Group agreed that the analysis was based on a number of assumptions:

- focused on one transmission system boundary
- all pre-vesting plants within the analysed system boundary would be operating above their Rated MW
- increase in MW would result in other generating units being taken off (in line with planning assumptions)

The Working Group acknowledged that may be possible, given recent advancements in technology, for Generating Units to operate above their Rated MW without putting undue strain on the equipment and without re-declaring/replacing the rating plating of the Unit. The decision to operate above Rated MW is usually associated with investment opportunities.

National Grid believes that going forward the current wording in the Grid Code is not sufficiently robust given the uncertainty and complexity which it will introduce into the planning and operation of the GB Transmission System.

The Working Group noted that they had been tasked with identifying a generic solution which could be codified within the Grid Code which addressed both National Grid and User's requirements regarding Generating Units exceeding their Rated MW

The Working Group noted that a generic obligation would not provide the flexibility that individual agreement via Bilateral Agreements would allow.

# Summary of Meeting and Actions

---

## 3) Potential Solutions

The Working Group noted the potential solutions previously identified and their associated issues:

- Option 1 – Equivalent Reactive Power Provision
  - Generating Units to be capable of continuously supplying Reactive Power within a range equal to that between 0.85 lagging power factor and 0.95 leading power factor at Rated MW across the full operational range, and not to operate outside this range under normal circumstances.

The Working Group noted that this solution would result in additional MW being produced and an associated reduction in MVar.

- Option 2 – Generating Units exceeding Rated MW in a limited set of circumstances and Option 3 Generating Units exceeding Rated MW under specific circumstances

The Working Group noted that these options are similar. Both would require conditions to be specified in the Bilateral Agreement. The main difference between options 2 (limited set of site specific circumstances) and 3 was that under option 3, the conditions would be based on a generic list of criteria i.e. the process would be more transparent.

The Working Group discussed the above proposed options, highlighting the potential issues both technical and commercial with them. The main issues discussed were:

- Access to additional MW
  - Members agreed that in times of system stress, having access to extra MW is useful.
- Added complexity in managing/planning the system
  - National Grid would have concerns of any solution would make the planning and managing of the GB Transmission System more complex in operational timescales.

The Working Group noted the difficulty in developing a prescribed list of criteria against which an assessment could be made which was applicable in all circumstances. The Working Group noted that this solution may lack User transparency which would be useful to the industry in understanding its Grid Code obligations.

- Option 4 – Reactive Market

The Working Group was informed that a previous Grid Code Working Group had investigated this issue. The Grid Code Reactive Power Review Group noted that it may be possible to introduce a relaxation on the lagging range of 0.90 power factor. This recommendation was made on the proviso that the shortfall in Mvar would be made up via the establishment of a unified reactive market.

The Working Group will recommend to the Balancing Service Standing Group (BSSG) to re-evaluate the feasibility of introducing a more competitive, commercial arrangement for the provisions of Mvar such that the technical provisions may be relaxed.

**Action: Working Group**

## 4) Equivalent Reactive Power Provision Capped (Top Hat Approach)

The Working Group discussed further the potential solution of providing a reactive power capability equivalent to 0.85 lagging to 0.95 leading power factor at Rated MW at Active Power outputs up to 'x%' above Rated MW (option 1 above).

The Working Group were reminded of the findings of analysis previously completed by National Grid which looked at quantifying the cumulative affects of pre-vesting plant operating at 5% and 10% above their Rated MW.

# Summary of Meeting and Actions

---

This analysis had indicated that, with reactive capabilities as described above, operation up to 105% Rated MW would not result in excessive additional transmission system reinforcement whereas operation up to 110% Rated MW would result in a requirement for approximately 25 extra MSCs plus significant thermal reinforcements.

In this analysis the additional reinforcements were attributable to two factors: the loss of reactive capability on those generating units operating above Rated MW and the altered flows of Active Power resulting from redistributed generation. The Working Group was informed of further analysis undertaken by National Grid which attempted to quantify the reinforcement required to cater solely for the loss of generator MVar capability from those Generating Units exceeding their Rated MW. This involved redistributing the generation as in the 110% Rated MW study previously undertaken but modelling the generating units with 0.85 power factor lagging capability at the increased MW output. These studies identified the reinforcements required for the altered Active Power transfers. Subtracting this requirement from the total requirement previously identified showed a need for approximately 13 MSCs in the 110% study that could be attributed to the reduced Reactive Power capability.

National Grid indicated that it would be able to accommodate a 5% increase in output above Rated MW from a System Operator and a cost benefit analysis perspective. National Grid suggested that for output exceeding 5%, the Generating Unit would be required to provide a capability between 0.85 power factor lagging and 0.95 power factor leading at the higher level.

The Working Group queried National Grid's assessment, findings and interpretation. The Working Group questioned National Grid's approach i.e. what was the key driver e.g. cost benefit or efficient operation of the GB Transmission System. The Working Group identified other possible options available e.g. unified reactive market, bid offer acceptances etc. National Grid indicated that the additional MWs could only be accommodated by extra investment/expenditure and that this additional investment/expenditure would have to be assessed against the benefit to all users.

## 5) Cost Benefit Analysis

The Working Group discussed the factors that should be included in a cost benefit analysis. These included:

- The costs of transmission system reinforcements
- The impact on MW costs
- The environmental benefits of more efficient MW generation
- BOA expenditure
- The deferral of new generation plant
- Complexity of system planning and operation

## 6) Transient Solution

The Working Group discussed the feasibility of introducing different continuous and short term reactive power capabilities. In practice this would mean allowing the despatch of Mvars within a reduced capability (for example 0.90 power factor lagging) during normal operation of the Transmission System whilst ensuring that during post fault circumstances the Generating Unit would be capable of providing 0.85 lagging at their pre-fault MW output level for a limited period.

National Grid would have a limited period of time (to be determined) to re-configure the network to alleviate the effects of the fault. After this period of time the Generating Unit would re-tap their transformer to return the unit's output to within its performance chart. It was noted that if National Grid had not rectified the problem within the specified time slot, it would take Bid Offer Acceptances to allow the reactive power output to be sustained whilst returning the unit to within its performance chart.

## Summary of Meeting and Actions

---

It was noted that operating outside its performance chart would place the Generating Unit under strain, the possible affects of which would have to be assessed as part of the feasibility analysis of the solution.

All Working Group members agreed to give further consideration to the solution from a technical (Generators) and planning and managing the system (National Grid) perspective.

**Action: All**

### 7) **Rated MW Definition**

The Working Group noted that the current definition of Rated MW refers to the rating plate of the Generating Unit. The Working Group noted that it may be beneficial to review the current definition such that it is suitably robust and provides sufficient clarity to Users. The Working Group acknowledged that it would not be appropriate to permit Generators to declare a low Rated MW whilst operating (continuously) at a higher level.

### 8) **Next Steps**

The following points will be discussed at the next Working Group meeting:

- Possible Solutions – Cost Benefit Analysis
- Implications for National Grid (planning and managing the system)
- Implications on Generators (technical and commercial)

The Working Group Report will incorporate:

- Cost/benefit analysis for each potential solution identified
- Identification of preferred solution which is assessed against the applicable objectives
- Implications on the GB Transmission System (inclusive of other relevant parties)
  - It was noted that the Scottish Transmission Owners had been kept informed of Working Group discussions and a request had been submitted for their input/evaluation on the potential solutions, highlighting any affects on their Transmission System.

The Working Group noted that the preferred solution would have to ensure that it did not discriminate against different generation types and users (new and existing).

The Working Group will recommend to the Balancing Service Standing Group (BSSG) to re-evaluate the feasibility of introducing a more competitive, commercial arrangement for the provisions of Mvar such that the technical provisions may be relaxed.

### 9) **Next Meeting**

The next Working Group meeting will be scheduled for 6<sup>th</sup> March 2008 at National Grid House, Warwick, commencing at 10am.

# Summary of Meeting and Actions

---

## Appendix 1 – Working Group Attendance

### Members Present:

Lilian Macleod	LM	Working Group Chairperson
John Addy	JA	National Grid
Neil Carter	NC	National Grid
Mark Perry	MP	National Grid
Stuart Easterbrook	SE	National Grid
Claire Maxim	CM	E.ON UK
Bridget Morgan	BM	Ofgem
Andrew Morgan	AM	RWE
John Morris	JM	British Energy
John Norbury	JN	RWE
David Scott	DS	EDF Energy