

**National Grid Company plc**  
Grid Code Review Panel

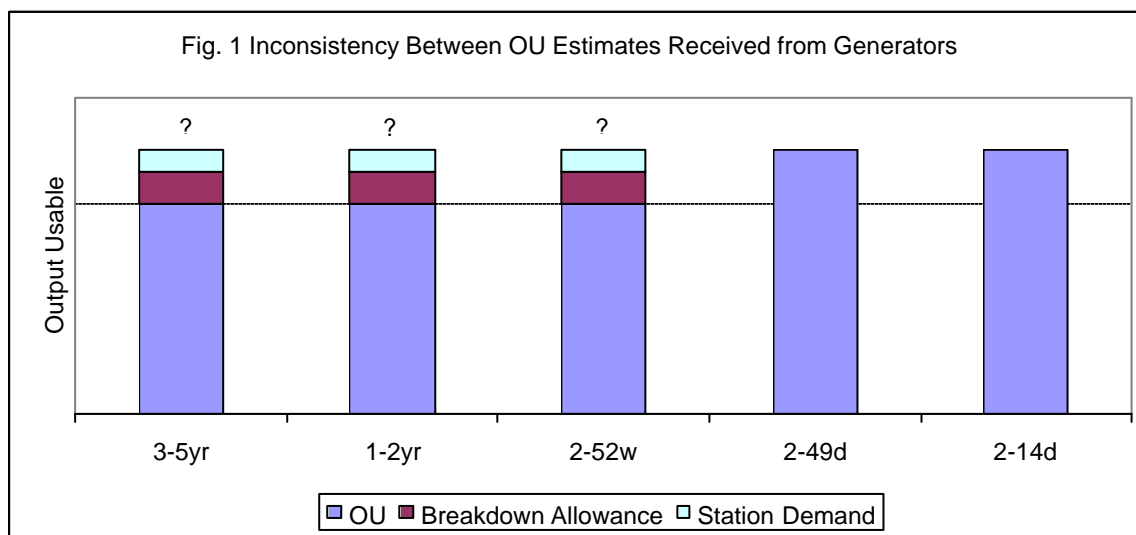
**Review of Electricity Market Information**  
Proposed changes to Grid Code Operating Codes OC1 and OC2

**1 Introduction**

- 1.1 The Grid Code and the BSC require NGC to provide a range of operational information to the market. This information either comes from market participants (e.g. generation data) or is produced by NGC (e.g. demand forecasts). NGC processes the data and communicates it to the market via the BMRS and other Elexon websites. The information is provided ahead of the gate closure, with lead-time dependent on the type of information supplied.
- 1.2 The information is intended to inform the market participants of the state of the system and aggregate generation/demand imbalances. It can be taken into account by the market participants to improve their individual imbalance positions. This information also helps to indicate risks of higher imbalance prices and should therefore provide improved signals to the market.
- 1.3 Improved self-balancing by market participants ahead of Gate Closure means that NGC can better perform its residual balancing role.
- 1.4 The key to the above improvement is the quality of information available to the market and NGC.

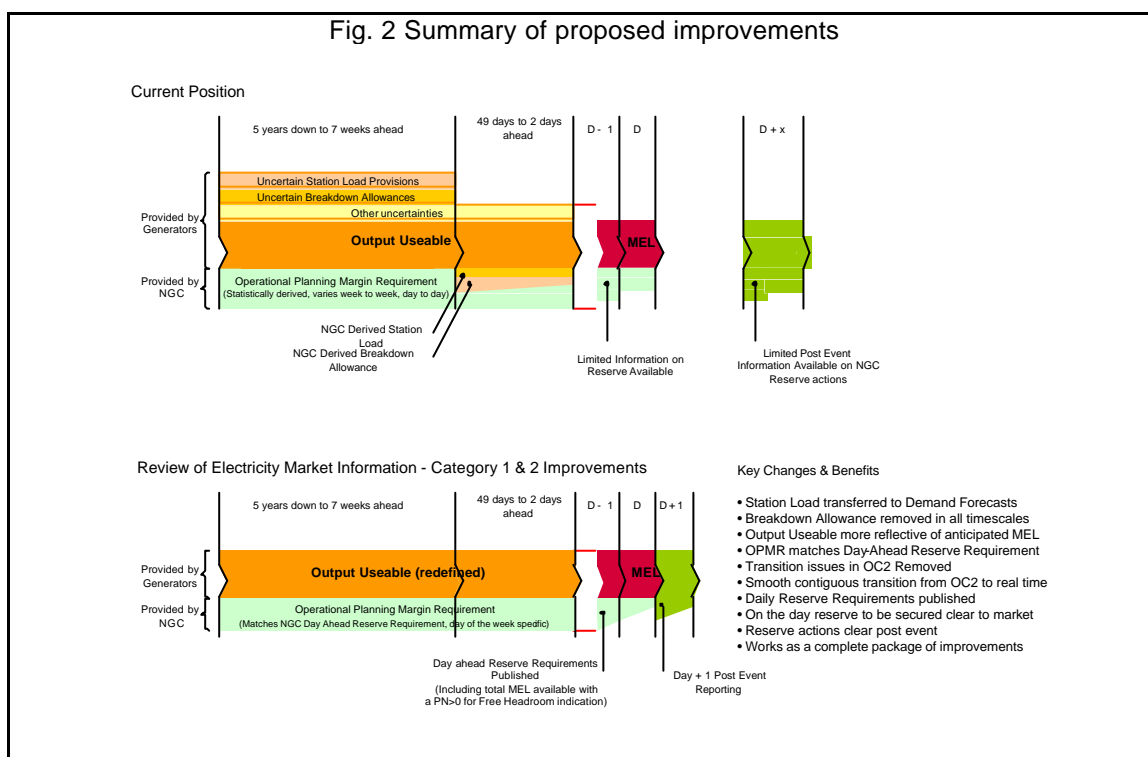
**2 Current Market Information**

- 2.1 NGC believes that the current content and process of delivery of market information can be improved. The main issues with the current information are:
  - The market information may be incomplete;
  - It may be inconsistent;
  - It may lack clarity;
  - Market participants may not understand it.
- 2.2 The issues outlined above may cause uncertainty in the market information received and disseminated by NGC. An example of inconsistent information is shown in Figure 1. NGC receives the Output Usable (OU) data from Generators across various timescales, ranging from 3-5 years ahead of real time to 2-14 days ahead of real time. The current OC2 provisions do not allow Generators to provide estimates of OU in a consistent manner across all timescales; for certain timescales (from 5 years to 7 weeks ahead of real time), Generators are required to adjust OU estimates for breakdown and station load but for other timescales, they are required to submit OU estimates without such allowances (NGC estimates these allowances for the period 2-49 days ahead of real time). This inconsistent treatment of OU adds unnecessary complexity for Generators in their OU submissions. From NGC's perspective, there is uncertainty regarding the level of allowances made by individual Generators, which feeds into any OU-based information that NGC disseminates to the market.



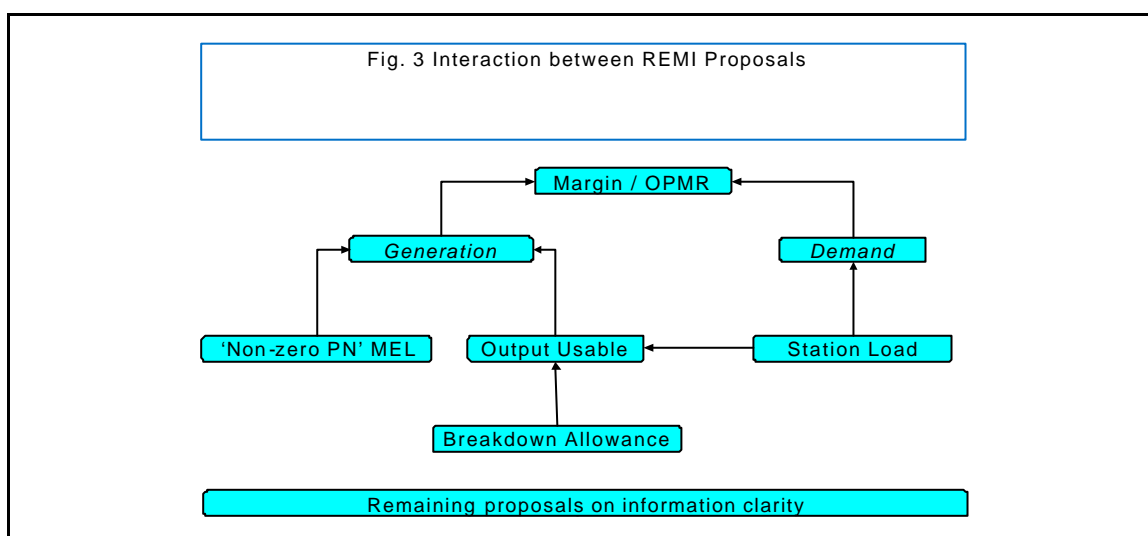
### 3 REMI Initiative

- 3.1 In order to enhance the provision of market information, NGC has set up an internal working group, 'Review of Electricity Market Information' (REMI).
- 3.2 The main objective of REMI is to facilitate self-balancing by market participants ahead of the gate closure, by publishing to the market additional and clearer information. This objective is to be achieved by:
- Removing existing historical anomalies in processes and reports;
  - Improving information clarity, and the market participants' understanding of it;
  - Providing additional meaningful information.
- 3.3 The REMI initiative focuses on improving market information in the following areas:
- Output Usable (OU) submissions by Generators
  - Demand forecasts
  - Margin requirements
- 3.4 REMI has looked at each of the above areas and developed a package of proposed improvements. Figure 2 shows both the current processes surrounding information received and disseminated by NGC, and the proposed improvement package. The processes span timescales ranging from 5 years ahead of day to after-the-day events.



- 3.5 The existing processes have a number of weaknesses which are highlighted in the top half of Figure 2:
- 3.5.1 The OU data received by NGC is not consistent across all timescales because some timescales (5 years down to 7 weeks ahead) include allowances for breakdown and station demand whilst others (49 days down to 2 days ahead) do not (NGC has to estimate these allowances for the shorter timescales). This historical anomaly causes uncertainty in the level of OU which feeds into OU-based and margin requirement information provided to the market.
- 3.5.2 The current methodology for determination of Operational Planning Margin Requirement (OPMR) is based on a statistical approach which is non-transparent and difficult to explain concisely.
- 3.5.3 OPMR is not specific to the day of the week and hence can not easily be translated into a day ahead Reserve Requirement (the day ahead Reserve Requirement is typically different for Monday-Thursday, Saturday and Sunday).

- 3.5.4 Limited information is published on availability of reserve (day ahead) and on NGC's reserve actions (post event).
- 3.5.5 The published MEL (Maximum Export Level) includes data corresponding to '0 PN' machines (i.e. where generation is not readily available and warming may be required) which does not give a true indication of the generation available.
- 3.6 The net effect of the above weaknesses is that the D-1 data (MEL and Reserve) is not aligned with that corresponding to longer timescales (OU and OPMR). One consequence of the disparity between two sets of data is the uncertainty in the determination of 'surplus' (= generation – (demand + OPMR)); this uncertainty means that it is not clear in advance to the market that the margins are sufficiently low that a NISM (Notice of Insufficient System Margin) is likely to be issued by NGC.
- 3.7 The bottom half of Figure 2 summarises the proposed improvements which include:
- ✓ Removal of breakdown allowance from OU submissions across all timescales;
  - ✓ Removal of station demand from OU submissions across all timescales;
  - ✓ Addition of station demand to demand forecasts by NGC;
  - ✓ Revised calculation methodology for OPMR which matches Day Ahead Reserve Requirement;
  - ✓ Publication of day ahead reserve requirements;
  - ✓ Publication of a 'MEL-type' figure which excludes '0 PN' data and gives a better indication of headroom that is readily available.
  - ✓ Publication of post event information on NGC's reserve actions on D+1.
- 3.8 The above improvements consist of several individual proposals which are interdependent. Because of the linkages between these proposals, selective implementation would not achieve the maximum benefit, and would increase the complexity and explanations required for each proposal. The proposals should therefore be seen as an integrated improvement package, as shown in Figure 3. On the generation side, the breakdown allowance has an impact on the definition of Output Usable which in turn affects the overall margin. The removal of '0-PN' data provides more useful information on generation that is readily available. The allowance for station load, which currently affects generation availability via Output Usable, is to be added to the demand forecasts. Details of individual proposals are covered in section 4.



- 3.9 Some of the other proposals under the REMI initiative are concerned with the clarification of existing information on Elexon/BMRS and NGC websites, and increasing reporting frequency of data which is already published on BMRS. These proposals do not involve recalculation of any parameters and hence do not interact directly with other REMI proposals. Details of these proposals are also covered in section 4.
- 3.10 The benefits of the improvement package include:
- ◆ Closer alignment between MEL and OU;
  - ◆ A match between OPMR and day ahead Reserve Requirements;
  - ◆ More transparent information on daily Reserve Requirements;
  - ◆ Smooth contiguous transition from OC2 data to real-time information;
  - ◆ Clearer post even information on NGC's reserve procurement actions.

3.11 NGC believes that the above benefits will translate into clearer and consistent information to the market which in turn could provide better signals to the market and hence improve self-balancing by market participants ahead of gate closure.

#### 4 REMI Proposals

4.1 The REMI initiative has identified three broad categories of improvements with classification based on the complexity of proposals and the timescales required to implement them.

4.1.1 Category 1 improvements intend to improve web-based information and do not require any Code or system changes. These improvements only require suitable briefing / notification to the market and can be delivered in advance of 04/05 winter;

4.1.2 Category 2 improvements require minor changes to the Grid Code (but not BSC changes), and can be delivered in time for 04/05 winter. Only category 2 proposals require approval from Grid Code Review Panel.

4.1.3 Category 3 improvements require major changes to both Grid Code and BSC as well as major changes to information systems. These improvements are likely to be delivered in the longer term, with timescales for individual proposals depending on the complexity of proposed improvement.

4.2 The REMI proposals for category 1 are summarised in Table 1.

Proposal Reference	Proposal Summary
1a OPMR Revised Methodology	Replace the current statistical OPMR methodology with a simplified and more transparent approach which reflects NGC-calculated Day Ahead Reserve Requirement.
1b Clarify Information on BMRS and Elexon Sites	Update the current 'help pages' on BMRS and Elexon web sites to reflect changes being progressed.
1c Clarification of BS Information Displayed on NGC Industry Information Website	Replace the current 'help pages' on NGC's industry information website with a 'more helpful' documentation.
1d Real Time Margin Data Publication	At D-1, publish on NGC's industry information website the current margin availability excluding '0 PN' machines, and day ahead and short-term scheduled reserve requirement.  At D+1, publish on NGC's industry information website the out-turned margin requirement, and information on reserve actions.

4.3 Category 2 proposals are summarised in Table 2 which shows the rules that currently apply and the proposed changes to these rules under each proposal. The Table also shows the relevant sections of the Grid Code which will require modification, should the proposed changes be implemented.

4.4 Table 2 shows that Grid Code changes are required for the proposals 2a and 2b(ii); details of the proposed changes to the Grid Code text are given in section 5. Proposal 2b(i) does not require any changes to the Grid Code but does require further explanation in OC2 Explanatory Notes. Proposal 2c does not require any changes to the Grid Code and is included here for completeness as it addresses the objective of REMI initiative.

Proposal Ref. and Title	Current Rules	Proposed Changes	Impact on Grid Code
2a Consistent approach to generation breakdown allowance	Output Usable (OU) is defined by reference to breakdown allowance.	Define OU without reference to breakdown allowance.	Glossary and Definitions (definition of OU)
	Generators subtract <u>breakdown allowance</u> from their OU forecasts for all timescales except for the forecasts provided each day for the period 2-49 days ahead (resolution = 1 day).	Generators will <u>NOT</u> subtract Breakdown Allowance from their OU forecasts for any timescales*.	OC2.1.4, OC2.4.1.2.1(a)(ii), OC2.4.1.2.1(e), OC2.4.1.2.1(f), OC2.4.1.2.2(a), OC2.4.1.2.2(e), OC2.4.1.2.3(a)**
2b(i) Consistent approach to	Generators subtract allowance for <u>station demand</u> from their OU forecasts for all timescales except for	Generators will <u>NOT</u> subtract allowance for station demand from their OU forecasts for any	None, but OC2 Explanatory Notes on OU

Table 2 Category 2 Proposals			
station demand	the forecasts provided on each day for the period 2-49 days ahead (resolution = 1 day).	timescales*. The station demand will instead be addressed as per Proposal 2b(ii).	need to be updated to reflect this consistent approach across all timescales.
2b(ii) Treatment of station demand	Generators subtract allowance for <u>station demand</u> from their OU forecasts for all timescales except for the forecasts provided on each day for the period 2-49 days ahead (resolution = 1 day).	NGC will <u>ADD</u> allowance for station demand to all demand forecasts.	OC1.6.1 (i)***
2c Further improvements to BMRS data (CP976)	The parameters INDDM, INDGEN, MELNGC and IMBALNGC are reported 5 times a day.	Increase the reporting frequency to a rolling half-hourly period.	None
<p>* The timescales correspond to the following:</p> <ul style="list-style-type: none"> <li>▪ For planning years 3 to 5, the 'provisional' OU forecasts provided by the end of week 2 for the period 3 to 5 year ahead (resolution = 1 week);</li> <li>▪ For planning years 3 to 5, the 'updated provisional' OU forecasts provided by the end of week 25 for the period 3 to 5 year ahead (resolution = 1 week);</li> <li>▪ For planning years 1 to 2, the 'final' OU forecasts provided by the end of week 10 for the period 1 to 2 year ahead (resolution = 1 week);</li> <li>▪ For planning year 0, the 'revised final' OU forecasts provided by 16:00 hours each Wednesday for the period 2 to 52 weeks ahead (resolution = 1 week);</li> <li>▪ For planning year 0, the 'agreed' OU forecasts provided by 11:00 hours each Business Day for the period 2 to 14 days ahead (resolution = 1 day).</li> </ul>			
** Proposed changes linked to live Consultation F/03			
*** Proposed changes linked to live Consultation G/03			

4.5 It should be noted that some of the proposed changes are affected by live Consultations F/03 and G/03.

4.6 Table 3 summarises the areas of work that will be tackled in category 3.

Table 3 Category 3 Proposals	
Proposal Ref. and Title	Proposal Summary
3a Rationalisation of Reporting Timescales	Consider removing the overlap in OC2 Generator submissions while maintaining the required level of detail for the market and NGC's System Security Studies  Align the OU, Margin, Surplus and Demand Forecast reporting / publication timescales
3b Comparable Demand Forecasts and Outturns	Consider publishing demand outturns on the BMRS that are compatible with forecasts (at present although Settlement Data can be used to reconcile all demand forecasts on the BMRS, only the daily 8:45 Forecast is comparable to INDO on the BMRS).
3c Determination of Confidence Levels Associated with Demand Forecasts	Consider providing further detail on the medium / longer range demand forecasts to provide an indication of the range the published normal forecast demand sits within (e.g. the 'normal' temperature the forecast is based on and the sensitivity MW / Degree Celsius).
3d Interconnector forecasts	Consider publishing discrete forecasts for interconnector imports / exports on the BMRS to make them explicate rather than within the total OU or demand  Consider who is best placed to provide the market with interconnector forecasts, e.g. interconnector users, interconnector owners / operators
3e OU Forecasts Associated with Wind Farms / Renewables	Consider how the OU submissions from intermittent renewable generation should be provided by, and presented to, the market.

<b>Table 3 Category 3 Proposals</b>	
<b>Proposal Ref. and Title</b>	<b>Proposal Summary</b>
3f Harmonisation of Geographic Zones and Boundaries	<p>Consider harmonising the three types of geographic boundaries such that all the boundaries line up with each other. The three types of boundaries, along with the number of boundaries in each type, are:</p> <ul style="list-style-type: none"> <li>▪ 5 'BMRS Constraint boundaries' (published day ahead and on the day, on BMRS);</li> <li>▪ 7 'OC2 Zonal boundaries' (published from 2 days to 5 year ahead, on Elexon website);</li> <li>▪ 11 'SYS (Seven Year Statement) Main system boundaries' (published 7 years ahead, on NGC's industry information website).</li> </ul>

- 4.7 Category 3 proposals are likely to require significant changes to the Codes (Grid Code and BSC) and computer systems. Consequently, these proposals will not be delivered for the 04/05 winter and are likely to incur significant costs.
- 4.8 NGC is currently developing its own thinking on category 3 proposals, and will provide further information over the coming months on how it will progress these proposals.

## **5 Proposed Changes to the Grid Code**

- 5.1 The proposed changes to the Grid Code are given in Appendices 1 (proposed changes to Glossary and Definition), 2 (proposed changes to OC1) and 3 (proposed changes to OC2).
- 5.1.1 Appendix 1 shows the removal of 'breakdown' from the definition of Output Usable.
- 5.1.2 Appendix 2 shows inclusion of station demand in NGC's demand forecasts.
- 5.1.3 Appendix 3 shows the effect of revised OU definition on the data provision across various timescales.
- 5.2 The OC1 changes proposed in Appendix 2 are dependent on whether Consultation G/03 is implemented. If G/03 is implemented, no changes to OC1 are necessary under the REMI proposals. However, if G/03 is not implemented, changes to OC1 will be necessary as outlined in Appendix 2.
- 5.3 The OC2 changes proposed in Appendix 3 (paragraph OC2.4.1.2.3(a)) are dependent on whether Consultation F/03 is implemented. The Appendix shows proposed Grid Code text for paragraph OC2.4.1.2.3 (a) for both scenarios (i.e. implementation or non-implementation of F/03).

## **6 Recommendation and Way Forward**

- 6.1 The Grid Code Review Panel is invited to comment on NGC's proposals outlined in this paper.
- 6.2 Subject to the Panel comments, NGC intends to initiate a wider consultation on the proposed changes.

## APPENDIX 1

### Glossary and Definitions

#### Proposed definition of Output Usable or OU

That portion of **Registered Capacity** which is not unavailable due to a **Planned Outage** ~~or breakdown~~.

## APPENDIX 2

### PROPOSED CHANGES TO OPERATING CODE NO.1

#### DEMAND FORECASTS

*If the Authority makes a decision on Consultation G/03 and directs its implementation, no changes will be necessary to this section of the Grid Code under REMI proposals. If G/03 is not implemented, the following changes are proposed:*

#### OC1.6 NGC FORECASTS

OC1.6.1 The following factors will be taken into account by NGC when conducting **NGC Demand** forecasting in the **Programming Phase** and **Control Phase**.

.....

(k) Station demand.

### APPENDIX 3

#### PROPOSED CHANGES TO OPERATING CODE NO.2

#### OPERATIONAL PLANNING AND DATA PROVISION

Change OC2.1.4 as follows:

“OC2.1.4 References in **OC2** to a **Generator's** "best estimate" shall be that **Generator's** best estimate acting as a reasonable and prudent **Generator** in all the circumstances. ~~and references to neutral data is to data which has a 50% probability of being exceeded.~~”

Change OC2.4.1.2.1 (a), (e) and (f) as follows:

“(a) By the end of week 2

Each **Generator** will provide **NGC** in writing with:

- (i) a provisional **Genset** outage programme (covering both **Embedded** and non-**Embedded Large Power Stations**) for Year 3 to Year 5 (inclusive) specifying the **Genset** and MW concerned, duration of proposed outages, the preferred date for each outage and where there is a possibility of flexibility, the earliest start date and latest finishing date; and
- (ii) a best estimate ~~neutral~~ weekly **Output Usable** forecast of all its **Gensets** for Year 3 to Year 5.”

“(e) By the end of week 25

Each **Generator** will provide **NGC** in writing with an updated provisional **Genset** outage programme covering both **Embedded** and non-**Embedded Large Power Stations** together with the best estimate ~~neutral~~ weekly **Output Usable** forecasts ~~(with a description of its statistical basis)~~ for each **Genset**, in all cases for Year 3 to Year 5 (inclusive). The updated provisional **Genset** outage programme will contain the MW concerned, duration of proposed outages, the preferred date for each outage and, where applicable, earliest start date and latest finishing date, together with an update of the **Output Usable** estimate supplied under (a)(ii) above.”

“(f) Between the end of week 25 and the end of week 28

**NGC** will be considering the updated provisional **Genset** outage programme, together with the best estimate ~~neutral~~ weekly **Output Usable** forecasts supplied to it by **Generators** under (e) and their **Registered Capacity** and will be analysing **Operational Planning Margins** for the period.”

Change OC2.4.1.2.2 (a) and (e) as follows:

“(a) By the end of week 10

Each **Generator** will provide **NGC** in writing with its previously agreed **Final Generation Outage Programme** updated and best estimate

~~neutral~~ weekly **Output Usable** forecasts for each **Genset** for weeks 1-52 of Years 1 and 2.”

“(e) By the end of week 34

Each **Generator** will provide **NGC** in writing with revised best estimate ~~neutral~~**Output Usable** forecasts for each **Genset** for weeks 1-52 of Years 1 and 2.”

Change OC2.4.1.2.3 (a) as follows\*:

“(a) By 1600 hours each Wednesday

Each **Generator** will provide **NGC** in writing with an update of the **Final Generation Outage Programme** and a best estimate **Output Usable** forecast ~~(without allowance being made for **Generating Unit** breakdown)~~ for each of its **Gensets** from the 2nd week ahead ~~to the 7th week ahead and a best estimate neutral **Output Usable** forecast (with allowance being made for **Generating Unit** breakdown)~~ for each of its ~~**Gensets** from the 8th week ahead~~ to the 52nd week ahead.”

\* If a decision to implement F/03 is made prior to a decision to implement proposed changes in this paper, then the change to OC2.4.1.2.3 (a) shall be as follows:

(a) By 1600 hours each Wednesday - **Weekly Resolution**

Each **Generator** will provide **NGC** in writing with an update of the **Final Generation Outage Programme** and a best estimate **weekly Output Usable** forecast ~~(without allowance being made for **Generating Unit** breakdown)~~ for each of its **Gensets** from the 2nd week ahead ~~to the 7th week ahead and a best estimate neutral weekly **Output Usable** forecast (with allowance being made for **Generating Unit** breakdown)~~ for each of its ~~**Gensets** from the 8th week ahead~~ to the 52nd week ahead.