APPENDIX G – DISPATCH RELATED DATA

G.1   INTRODUCTION

G.1.1   The information listed in sections G.2 to G.7 of this Appendix describes the *dispatch related data* referred to in sections 6.1 and 8.1 of this Chapter which the *PSO* must produce, revise as required, and communicate to the *EMC* in accordance with those sections and the applicable *market manuals*. Except as otherwise specified in these *market rules,* the *EMC* shall utilise the latest *dispatch related data* received from the *PSO*. In the event that such latest *dispatch related data* is not uploaded in time for the imminent *market clearing engine* run, the *EMC* shall utilise the latest available and uploaded *dispatch related data* for that *market clearing engine* run.

> **Explanatory note: The main area where the EMC may deviate from using the latest available and uploaded dispatch related data received is the StartGeneration of the generation units, for which Appendix 6D contains provisions to use previous dispatch runs to forecast the initial generation of facilities instead of out of date PSO data if necessary.**

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G.2   LOAD DATA

G.2.1   The *PSO*'s expectation of *non-dispatchable load* for each *dispatch period* within the *market outlook horizon*.

G.2.2   The *PSO*'s expectation of *dispatch periods* in which there exists a serious risk of any of an *energy*, *reserve* or *regulation* shortfall or of an *energy* surplus within the *market outlook horizon*, together with the amount of the shortfall in each period, and in the case of energy shortfalls, the expected *dispatch network nodes* at which the shortfall will occur.

G.2.3   The actual distribution of *non-dispatchable load* over all the *dispatch network nodes* for the current *dispatch period.*

G.3   GENERATOR DATA

G.3.1   The *PSO's* expectation of the MW *energy* output level of each *generating unit* as at the beginning of the upcoming *dispatch period*.

G.3.2   Any *generation fixing constraints* to be applied in respect of the output level of each *generation registered facility* and each *import registered facility* for each *dispatch period* in the *market outlook horizon*.

G.3.3   Any additional *generic constraints* to be applied in respect of the output level of any group of *generating units* for the purpose of reflecting real limitations on those *generating units* for each *dispatch period* in the *market outlook horizon*.

> **Explanatory Note: Generation fixing constraints are a special class of constraints, having the form of security constraints, imposed directly by the MCE on an individual generating facilities or import registered facility's output (e.g. to limit output of a generator to a level suitable for voltage support). The additional constraints referred to in the previous clause have the same form as security constraints but may be applied to reflect physical constraints on groups of facilities at a location. These constraints may be required to address real-time outages etc., which are not strictly security related.**

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G.4   TRANSMISSION DATA

G.4.1   The set of *dispatch network lines* that are in service in each *dispatch period* of the *market outlook horizon*.

G.4.2   The thermal line ratings for each *dispatch network line,* for each *dispatch period* of the *market outlook horizon*.

G.4.3   The operational flow limits on each *dispatch network line* for each direction of flow for each *dispatch period* of the *market outlook horizon*.

G.4.4   The resistance, reactance and fixed losses for each *dispatch network line,* for each *dispatch period* of the *market outlook horizon*.

G.4.4A   For the phase-shifting transformer of each *pst line*:

(i)   the phase angle shift per one tap position change;

(ii)   the minimum and maximum tap positions; and

(iii)   the tap position that results in zero degree phase angle shift,

for each *dispatch period* of the *market outlook horizon*; and

(iv)   the latest tap position of the phase-shifting transformer. The *PSO* shall provide this value to the *EMC* before the start of each *dispatch period*.

G.4.5   The *intertie schedules* for all *interties* in each *dispatch period* of the *market outlook horizon*.

G.4.6   The *PSO's* estimate of the reactive power flows on each *dispatch network line* in service in each *dispatch period* of the *market outlook horizon*.

G.4.7   Such other information as may be required to represent the *dispatch network* for each *dispatch period* of the *market outlook horizon*.

G.4.8   The *connection* status of the *intertie* lines for each *dispatch period* of the *market outlook horizon*.

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G.5 SECURITY, RESERVE AND REGULATION DATA

G.5.1 The set of all *security constraints* limiting combinations of *dispatch network line* flows, *generation registered facility* output levels, *import registered facility* output levels and net injections at each *dispatch network node* for each *dispatch period* of the *market outlook horizon*.

G.5.2 The set of *reserve provider groups* with the *reserve class* and the set of *registered facilities* to which each such *reserve provider group* is associated applicable for each *dispatch period* of the *market outlook horizon*.

G.5.3 The piece-wise linear effectiveness functions for each *reserve provider group*, describing the expected effectiveness of different levels of *reserve* quantity scheduled from that *reserve provider group* for each *dispatch period* of the *market outlook horizon*.

G.5.3A The set of *load zones* applicable for each *dispatch period* of the *market outlook horizon*.

G.5.3B For each *load zone*, the maximum of the aggregate of *reserve* response and *load curtailment* for each *dispatch period* of the *market outlook horizon*.

G.5.3C For each *reserve class*, the maximum proportion of the risk for that class that can be covered by *reserve* provided by *load registered facilities,* for each *dispatch period* of the *market outlook horizon*.

G.5.3D The system limit on the maximum of the aggregate of *reserve* response that can be provided by the *load registered facilities* and *load curtailment* that such *load registered facilities* can be subject to for each *dispatch period* of the *market outlook horizon*.

G.5.3E For each *load zone*, the set of *dispatch network nodes* associated with that *load zone* for each *dispatch period* of the *market outlook horizon*.

G.5.4 The minimum required *reserve* for each *reserve class* for each *dispatch period* of the *market outlook horizon*.

G.5.5 For each *reserve class*, a risk adjustment factor that scales the contingency risk determined within the *market clearing engine* to reflect special conditions within each *dispatch period* of the *market outlook horizon*.

G.5.6 The total *regulation* requirement for each *dispatch period* of the *market outlook horizon*.

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G.5.6A The minimum required *regulation* for each *dispatch period* of the *market outlook horizon*.

G.5.7 An estimated *intertie* contribution factor that represents the assistance provided by the *intertie* in the event of a frequency drop, when one or more of the *interties* are *connected*.

G.5.8 For each *reserve class*, the maximum acceptable frequency deviation for the situation where one or more of the *interties* are *connected*.

G.5.9 For each *reserve class*, the maximum acceptable frequency deviation for the situation where none of the *interties* are *connected*.

G.5.10 For each *reserve class*, an estimated load damping factor that represents the proportion by which total demand is expected to decrease following a drop in frequency.

G.5.11 For each *reserve class*, an estimated GT output damping factor that represents the proportion by which GT output is expected to reduce following a drop in frequency.

G.5.12 The set of all *generation registered facilities* likely to decrease generation output as a result of a drop in system frequency.

G.5.13 The specified nominal system frequency in Hz.

G.6 VIOLATION COSTS

G.6.1 The values of all *constraint violation costs* pertaining to *security constraints*, *generation fixing constraints* and other *generic constraints*, as well as to *reserve, regulation* and *dispatch network lines* that are specified in Appendix 6J or are established by the *PSO* in accordance with section 2.3 of this Chapter 6.

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G.7   GENERAL INFORMATION

G.7.1   Notwithstanding any other provisions of this Appendix, the *PSO* shall advise the *EMC* of any circumstances relating to one or more *registered facilities*, or to the *electricity system* as a whole, which have caused or are likely to cause the *PSO* to do any of the following within the current *pre-dispatch horizon or short-term horizon*:

     a.   impose *security constraints, generation fixing constraints* or *generic constraints* that differ significantly from those that are normally applied;

     b.   adjust any *reserve* or *regulation* parameters used as inputs to the *market clearing engine* in ways that differ significantly from the values normally applied by the *PSO* at each time of day;

     c.   significantly revise its expectations of *load*, of any *energy* surplus or of any *energy*, *reserve*, or *regulation* shortfall; or

     d.   impose *constraint violation costs* that differ significantly from the values normally applied by the *PSO* at each time of day.