

## **Principles of Dispatch and the Design of the Market Schedule in the Trading and Settlement Code**

Synergen's response to SEM-09-073

This paper is Synergen's formal response to the RA's paper "Principles of Dispatch and the Design of the Market Schedule in the Trading and Settlement Code". Synergen has no objection to this response being published.

Synergen welcomes the latest consultation by the RAs on the scheduling and dispatch issues associated with increasing levels of intermittent and non firm generation coming onto the system. As noted in the Summary of SEM-09-073 the previous consultation (SEM08-002) gave rise to comments from many participants (described in this consultation as "a general view") that:

- 1.the SEM was not a robust market design against high levels of wind penetration;
- 2.there is a risk that conventional plant may, in future, struggle to cover its fixed costs;
- 3.concerns that the CPM was likely to over-reward wind generation.

Synergen concurs with these points.

Synergen notes that there is a separate consultation process underway regarding the CPM (which should address the bullet 2, in part, and bullet 3 above). Clearly these matters are strongly linked, and thus need to be considered together - notably as the SEM reward system for generation is predicated on the combined revenues from the unconstrained schedule (via infra-marginal rents) plus CPM revenues.

The remainder of the paper is structured as follows:

- in section 1 we consider the present arrangements, and the linkages between the market schedule and other generator revenue streams - we also comment on the further modelling required to assess the questions raised;
- in section 2 we comment on issues of non-firm access within the unconstrained schedule – and the medium term nature of this issue;
- in section 3 we consider the key issues for the derivation of an efficient market schedule once firm access has been delivered for the major new renewable infrastructure;
- in section 4 we comment on Priority Dispatch issues;

- in section 5 we comment on alternative approaches that may be appropriate in the medium/long term; and
- in section 6 we comment on the specific questions raised by the RAs in the consultation paper.

## 1 The present arrangements

### 1.1 Synergen's understanding the issues raised by the RAs

The consultation paper sets out options for addressing the treatment of both dispatch and scheduling within the SEM. It stops short of more radical alternatives to the existing SEM design (even in the medium term) and instead concentrates on seeking changes to the existing market rules to deliver different payment streams to some generation at times of:

- export constraints; and
- excess generation.

The starting point for the RAs consideration is that an efficient market has both a dispatch that minimises actual production costs, and that infra-marginal rents are efficiently allocated – notably to plant that actually meets customer demand. Synergen fully accepts both these objectives in principle, and in practice where there is an efficient market where subsidies do not distort competitive outcomes. Under the existing SEM arrangements, and Governments' policies regarding support for renewables, it is increasingly likely that the allocation of infra-marginal rents will not go to generators meeting demand at all times, and hence these market principles are not manifested in the practice of the SEM.

### 1.2 SMP in the SEM

To put infra-marginal rent allocation in the context of the SEM, generators may receive such revenues where their bid is included in the market schedule and their bid is below SMP. Generators are then paid SMP – infra-marginal rents being retained whether they generate or are constrained-off (for generators with firm access). It is, however, increasingly likely that some conventional generation will be scheduled down (notably overnight) due to the level of available wind (and other price taking generation). In such circumstances the conventional generation may still be dispatched, but will then be paid for such volumes at its bid price. Thus, generation that is constrained down due to transmission or security constraints retains its infra-marginal rent, whilst generation that is constrained on is paid bid. Underlying this approach is the assumption that the constrained on generator was truly out of merit (on an unconstrained basis). This, however, must assume that derivation of the unconstrained schedule is an efficient way to schedule plant, and that the SMP set is a true reflection of marginal values. At times when significant price taking generation is scheduled (but may in practice need to be backed off for system security reasons to keep conventional plant on the system). Consequently Synergen believes that SMP itself as the central element of the market pricing

could cease to be a meaningful reflection of underlying costs of generation. This would undermine the viability of some, necessary, conventional plant (i.e. plant that under an efficient allocation of infra-marginal rents would be on the system and viable), and have a detrimental impact on new entry.

The net impact of this is that infra-marginal rents are not always paid to generation that meets actual demand – indeed notably with constrained off payments in the market this is often not the case.

Synergen supports the continuation of constrained on and off payments given the basis of the SEM design. Consequently it concurs with the RAs that the key questions revolve around the derivation of the unconstrained schedule. This is the primary determinant of generator revenues, and crucially the infra-marginal rents. Dispatch efficiency is clearly desirable from an overall system cost perspective, but individual generators bidding in a cost reflective manner are financially neutral to this.

It is Synergen's view that the existing SEM design would not be robust against the envisaged market structure with high levels of wind penetration.

### **1.3 The link to the CPM**

The SEM also employs a specific Capacity Payment Mechanism (CPM). The workings of this mechanism are complex, and provide for different levels of overall capacity costs/payments for different new entry scenarios. For example, new entry of CCGTs will increase CPM costs/generator revenues as peaking plant is likely to be scheduled less, and thus its revenue requirement from the CPM increases.

As generator bids are limited to SRMC, there is a high dependency on the ability of other payment streams to reward generators. This relates to both CPM revenues and Ancillary Service payments.

The CPM aims to set the correct level of reward for capacity on the system. As the CPM level is based on assumed revenue requirements of the BNE (presently the BNE peaker), other plant with higher capital costs receives a contribution to its fixed costs. Thus the level of this contribution (or at least the available amount of CPM reward available to generators in aggregate) plus infra marginal rents theoretically deliver the right amount and type of plant on the system. In many market arrangements this level of reward is theoretically discovered through alternative trading arrangement – be they bilateral contracting or markets with implicit capacity rewards. The SEM is unusual insofar as the reward mechanism is more mechanism than most in its setting of payments – notably because the Bidding Principles explicitly prohibit generators changing their bid prices to compete for higher rewards – i.e. if the CPM calculation proved to be insufficiently remunerative then generators could not increase SMP to make good this “shortfall”. Conversely, a CPM set too high would over-reward generators.

Synergen is concerned that if one element of the generators reward mechanism is not efficient, then generator rewards across the class, will be “incorrect”. It would be naive to assume that any energy market produces rewards that are at a theoretically efficient level at all times, but most do allow for participants to take corrective action if they perceive rewards are too high (i.e. entry comes in) or too low (market exit, or an increase in prices).

With respect to the CPM Synergen believes that there is a possible outcome in the medium term where high levels of intermittent, priority dispatch, generation leads to significant reductions in the CPM. This may arise due to the calculation of required capacity rewards for the BNE peaker in a system with a radically different plant mix to that which presently exists. One possible scenario is that the BNE peaker would gain significant infra-marginal revenues under a high level of wind capacity scenario. This would reduce its requirements for CPM revenues. Furthermore, the profile of pool prices could be low on average, but volatile and spikey. In combination, this would have highly material impacts on the ability of conventional plant to earn adequate rewards. This may require that significant reserve, or reliability must run type payments were needed to maintain the required level of conventional plant – with the consequential impacts on AS costs. Under such a scenario there would be a disconnect between:

- SMP and the actual marginal cost of generation;
- SMP and contract prices; and
- The unconstrained schedule and generation revenue.

The consequences of this could include:

- Opaqueness;
- The undermining of the principles of the unconstrained schedule equally rewarding all generation scheduled – as revenues would increasingly become a matter of (possibly negotiated) AS rewards; and
- Detrimental impacts on (the required types of) new entry.

## 1.4 Modelling questions

In its response to SEM- 08-02, Synergen requested that the impact on the BNE infra-marginal rents was considered as part of the assessment of impacts and options. Synergen does not believe that the modelling undertaken to date fully considers the impact on the CPM of BNE infra-marginal revenues (and assumed AS revenues) under high wind penetration scenarios.

## 2 Issues of non-firm access within the unconstrained schedule

The paper highlights the issues associated with non firm generation behind an export constraint being included in the unconstrained schedule. In short, non-firm generation can gain access to the unconstrained schedule, and obtain infra-marginal rents as a consequence of its low dispatch price. Firm generation behind the same constraint may also obtain infra-marginal revenues (but be constrained off) in circumstances where generation that is located so as to be able to meet demand is constrained on at bid price. The situation thus arises where generation required to meet demand is unable to achieve infra-marginal rent for constraint (and pricing rule) reasons.

Synergen notes that the “firmness” of access to market does, in practice, give rise both to significant constrained on and off payments. This arises on major constraints (such as the NI-Rol transmission line capacity) as well as in circumstances where new generation (generally price taking) is within the “unconstrained” schedule given that its bid price is less than existing (firm) generation. The principles of firm access as set out in the T&SC for those determined to have such access at the point of SEM start should not be unwound so long as the present trading framework exists as the SEM design was (a) put in place in full knowledge of such constraints, and (b) the alleviation of any such constraints, if it is economic to do so, lies wholly outside the control of existing firm generators.

Regarding the impact of new entry with non-firm access, the market rules clearly identify that generation is firm, or non-firm. However, the consequences of non-firm generation in the unconstrained schedule appear not to have fully appreciated the impact of such plant in the market schedule, and the wider effects of that on infra-marginal rent allocation.

Of the options presented by the RAs (Options 1 – 3) Synergen considers that:

- In principle Synergen has favoured a regional pricing model, where SMPs diverge if major constraints bind, but previous decisions on market design by the RAs have clearly established that such an approach is deemed unacceptable. Thus, Synergen is making comment on the basis of the SEM as implemented by the RAs, not what it considered to be the most appropriate design. On this basis Synergen assumes that, on the basis of market design consistency, that Option 1 is not acceptable to the RAs as it undermines central principles of the SEM as established. If such an approach was implemented there would appear to be major implications for plant behind major constraints – notably the NI/Rol transmission line.
- Synergen favours Option 2. It recognises that where transmission constraints are time limited, the risks of non-firm new entry fall on the entity with non-firm or (most likely) partially firm access. Synergen considers that this approach is consistent with the principles of the SEM

and would be the simplest, and most cost effective approach to adopt. The risks of building before firm access was available would thus be clear ex-ante to new entrants.

- Option 3. Synergen believes that this option may be feasible, but that a more detailed examination of its technical feasibility, and costs, would be required to justify it being taken forward instead of Option 2.

### **3 The derivation of an efficient market schedule once firm access has been delivered for the major new renewable infrastructure**

Section 4.4 of the consultation paper provides a sound outline of the technical issues that exist in accommodating large quantities of wind generation in the SEM. As a starting point, Synergen does not consider that the “unconstrained” schedule – as it is often referred to as, is unconstrained in any way other than the setting of the market schedule does not take transmission constraints and operating reserve into account. In other respects, generator technical characteristics, and technical system considerations, feed into the determination of the market schedule. Synergen believes that the determination of the market schedule should, as increasing levels of wind is connected to the system, be updated to fully account for its characteristics. Synergen believes that the proposal set out by the RAs (which is largely about information provision) do not go far enough. Rather, there should be an independent report on the appropriate parameters that the SMO would require ensuring that plant included in the unconstrained schedule is capable of being dispatched within system security constraints. This would ensure that the market schedule, and dispatch, retain a close relationship with each other.

Synergen does not support the imposition of further Grid Code requirements on all generators – this is likely to impose undue costs on the whole generation portfolio, cost that would ultimately have to be factored into SMP and the CPM.

Synergen considers that taking steps to ensure that the market schedule reflects the plant that can actually be run to meet demand is an important plank in maintaining a series of payment streams that correctly incentivise the correct mix of plant. The alternative would be to accept that the market schedule became increasingly less reflective of the actual marginal cost of generation – and the degradation of infra – marginal rents. If infra-marginal rents are not to the greatest extent possible within the SEM, then conventional generation may increasingly be reliant upon explicit support mechanisms such as the CPM and AS payments. As noted earlier, the CPM payments under high wind penetration scenarios are unknown to us. Further, the CPM itself is under review, with a potential shift in rewards to increasingly “flexible” plant. In short, revenues may become increasingly opaque, and subject to mechanistic determination, or regulatory determination, with the inherent risks that brings.

## 4 Priority Dispatch issues

Synergen notes the RA view that Priority Dispatch may be either “absolute” or “qualified”. At the seminar of 4<sup>th</sup> September the RA view was that its legal advice was that the “qualified” interpretation was likely to be robust – although some views from the floor ran contrary to this opinion. As a first step, Synergen believes that the RAs should publish the advice that they have received on this matter in order to fully inform parties commenting on the options - noting that each party may take its own advice on this matter.

Regarding the Options presented, and subject to the legality of Priority Dispatch being a qualified right, Synergen would favour Option 2a and that this would provide a least cost solution to customers. Synergen concurs that Option 2c may be difficult to implement, given the differences in subsidy arrangements across the two jurisdictions.

## 5 Alternative approaches that may be appropriate in the medium/long term

The SEM design is a complex, nested, arrangement providing a basket of incentives that in theory should lead to an approximation of the most efficient plant mix – subject to Government objectives. Like all energy market designs it has some limitations, reflecting as it does both structural and political objectives, as well as purely economic efficiency objectives. Synergen has argued in this paper that unless changes are made in a holistic manner, the balance of these incentives, runs the real risk of either undermining the viability of generators that under other market designs would be economic, and/or degrading central elements of the market mechanism to the extent that necessary generation must be supported through directed payments – not competitive processes. Synergen is concerned that:

- The linkages between the various market payment streams for generators are being considered in separate consultations;
- Modelling to date does not assess the impact of change in one element of the market on other payment streams; and
- The options presented may be overly conservative and are not directed at the underlying market problems.

Synergen accepts that decisions on plant mix, and consequent subsidy arrangements, are to a large extent a matter for Government. However, such support needs to lie outside of central market mechanisms and should not place any form of generation in a position where it is neutral to the market price being appropriately remunerative.

Synergen believes that the nature of the present consultations on:

- locational charging and TLAFs;

- the CPM;
- AS harmonisation;
- SEM regional integration; and
- the scheduling and dispatch mechanism,

amount to a de-facto review of the central elements of the SEM. Consequently, Synergen believes that the cross-industry committee structure that was in place for discussions on SEM design should be re-convened. Further, Synergen believes that, as the range of changes under consideration is, in combination, addressing central elements of generator payments and thus retailer costs, then the option of moving towards a bilateral market along BETTA lines should be on the also be fully assessed given plans for increased interconnection with that market.

## 6 RA consultation questions

*(i) The RAs should seek to ensure that the construction of the market schedule is such that infra-marginal rents are allocated to generating units that are of values to the real-time operation of the system and, where deemed appropriate, the RAs will make the necessary changes;*

Synergen broadly concurs with this statement – but not to the extent that it seems to blur the distinction between scheduling and dispatch decisions that are a consequence of transmission constraints. With respect to the market schedule, infra-marginal rents should be allocated to plant that could be utilised in dispatch, where such generation is firm. This would mean that intermittent firm generation should only be included in the market schedule to the extent that it could be dispatched within system security limits. Over time, this may mean that the gate closure timeframe needs to be brought much closer to the real time operation of the system.

*(ii) The TSOs and asset owners should continue to make available information relating to:*

*(a) their understanding of what changes to the scheduling and dispatch of generation are being contemplated in light of the increasing level of renewable generation on the system, including where there may be technical limitations on the quantity of certain types of plant that can be accommodated on the system; and*

*(b) their view of how technical issues (for example system inertia, fault levels etc.) will be resolved;*

Synergen concurs with the RA position above. This is necessary, but essentially an issue regarding the implementation of (i) above.

*(iii) In relation to the Grid Code;*

- (a) the current initiative from the TSOs to place additional emphasis on enforcing existing Grid Code obligations on incumbent and new generating units should continue; and*
- (b) the TSOs should also keep the Grid Code under review in order to ensure that future generation portfolios continue to support the satisfactory operation of the system;*

Changes to the Grid Code should not impose cost on all participants when specific provisions may be made for a sub-set of participants. Further, existing generators derogations should be retained.

*(iv) The RAs would welcome views on how access to the market schedule for plant situated behind export constraints should be limited, on the options described in Section 4.5. Alternative options are also welcomed.;*

As noted in the main body of the response, Synergen supports Option 2 as set out in the consultation paper.

*(v) The RAs propose that “Deemed Firm Access”, whereby FAQ or MEC is allocated in advance of the completion of necessary transmission system infrastructure reinforcements, should not be introduced to the SEM;*

Synergen supports this proposal.

*(vi) Given that it would represent the most efficient short-term use of available resources, and is consistent with existing dispatch processes, the RAs propose that the TSOs should continue to dispatch the system to minimise production cost of generation, taking into account system security requirements and, as now, disregarding any concept of firmness in the dispatch process;*

Synergen supports this proposal.

*(vii) The Regulatory Authorities welcome comments from interested parties on the options for priority dispatch, as presented in Section 4.8;*

Synergen supports Option 2a, for the reasons set out in the main body of this response.

*(viii) The RAs propose that the rules applying to hybrid plant should depend upon which of the options for treatment of priority dispatch plant are eventually chosen. The RAs welcome views on how the principles of priority dispatch should be extended to hybrid plant as part of the response to this consultation;*

No specific comments on this question.

*(ix) If any of the options in Section 4.5, for allocating infra-marginal rents behind export constraints, is adopted then that option should apply also to Variable Price Takers. If none of these options is adopted and the existing arrangements for allocating infra-marginal rents being export constraints retained, then Variable Price Takers should be limited in the market schedule to the maximum of actual output and FAQ (or MEC when infrastructure works are complete and the VPT becomes fully firm);*

Synergen concurs with this proposal

*(x) The RAs propose that if Option 2(a) or 2(c) in Section 4.8 is adopted, SMP should be set using the effective bid prices of the marginal Variable Price-Taking generation, rather than at PFLOOR, in the event that the quantity of price-taking generation exceeds demand and reflecting any external subsidies received by the plant (i.e. it should reflect the price used in the dispatch of the plant by the TSOs). PFLOOR would still be used as a lower limit to SMP;*

Synergen accepts this proposal.

*(xi) The RAs propose that the quantity of generation charged PFLOOR (or paid at the revised SMP set out in proposal 4.11) in the event of an Excessive Generation Event arising from an excess of Price Taking Generation should not exceed System Demand. The MSQs of Price Taking Generation should, in such circumstances be pro-rated down so that the total quantity is equal to System Demand;*

Synergen accepts this proposal.

*(xii) The RAs propose that where tie-break rules are required, de-loading should be instructed on a pro-rata basis in a manner determined by the TSOs;*

Synergen accepts this proposal, subject to specific consultation by the TSOs regarding a detailed approach. Clearly, this cannot be in a manner that is in any manner that relies upon the discretion of the TSOs.