

Buy-out of Mandatory Services

A position paper by the Balancing Services Standing Group

Presented to the CUSC Amendments Panel, 29 July 2005

1. Purpose of this paper

This paper brings together and summarises the work that has been undertaken by the Balancing Services Standing Group (BSSG) over the past six months relating to the issue of 'Buy-out of Mandatory Services'. The paper describes the ideal of buy-out, and highlights the issues associated with progression towards that ideal. The paper also considers the scope of services that could be covered by a buy-out scheme.

In summary, this paper puts forward the following positions:

- The feasibility of buying out of mandatory obligations must be assessed against both normal and abnormal transmission system conditions;
- The varied characteristics of different mandatory services determine that the buy out of these obligations must be assessed on a service by service case;
- Issues relating to security and quality of supply remain a major consideration to the development of a transparent, equitable, model for the buy out of mandatory obligations;
- The degree to which any buy out can be considered must be assessed against security of supply implications prior to any commercial considerations being entertained. Therefore technical considerations must determine the parameters by which the design of any buy-out mechanism can be evolved; and
- Further work can be done to consider whether there is the possibility for the current derogation process to be augmented with a buy-out facility.

2. A note on governance

This paper has been prepared by the BSSG which acts as a Standing Group via the governance of the CUSC. Many of the issues discussed within this paper cross over into the governance area of the Grid Code. Any further work that could result in actual proposals to change either of these codes should be progressed via the appropriate formal governance mechanism of that code. It is also possible that developments could interact with the Security and Quality of Supply Standards (SQSS).

3. Buy-out ideal

The Grid Code and the CUSC contain obligations (via the requirement to provide Mandatory Services, or to comply with connection conditions) that must be complied with prior to a User connecting to the Transmission System¹. The concept of buy-out is that a User can make a commercial/economic choice to:

- comply with these obligations; or
- not comply with these obligations, but instead buy-out of them by contracting with another User (or NGC) to provide them on its behalf.

¹ In the main this applies to Licensed Generators

Having a published price or a traded market for buying-out of certain obligations facilitates this choice.

The design of any buy-out mechanism must ensure that the SQSS can continue to be met.

4. What services could be covered by a buy-out scheme?

Under the CUSC/Grid Code, Users are obliged to provide capability for the provision of Mandatory Frequency Response and Reactive Power. Frequency response is relatively non-localational under normal transmission system operating conditions, whilst reactive power is extremely localational.

The BSSG has considered the difference between:

- The **capability** of providing the service. Namely that the generator is constructed so that it is physically capable of providing the service. Generally the capability to provide has to be built in at the time of construction. It was noted by the BSSG that capability could generally be considered to be built-in as standard for traditional technology stations, but that this was not necessarily the case for new technologies; and
- The ability to **utilise** the service in real-time. Namely the ability of the generator to deliver the capability into a usable service in real-time. It was noted that market signals (relating to the provision of the service) should assist in incentivising a generator to install the capability in the first place.

It has been suggested that the maximum benefit from a buy-out scheme would be to allow buy-out of capability and utilisation, i.e. to remove the requirement for a generator to design in the capability for providing the service in the first place.

Reactive Power

The BSSG has previously analysed the extent of competition for the provision of reactive on a zonal basis (report to the November 2003 CUSC Amendments Panel 'Report on the liquidity of current reactive power arrangements). This analysis concluded that competition on a zonal basis was very limited, and on this basis the BSSG agreed not to pursue the introduction of more competitive arrangements on a zonal basis.

It was therefore agreed by the BSSG that a full scale (generic) introduction of buy out arrangements for reactive power should not be considered at this stage, but that it may be possible to consider requests for buy-out on a case-by-case basis only.

Frequency Response

The BSSG considered whether the scope of a buy-out mechanism could include the capability and/or utilisation of the service of Mandatory Frequency Response. Essentially this would mean that the User would chose not to have a response capability, and would not have to provide a response provision matrix in a Mandatory Services Agreement, but instead would source a volume of frequency response equal to its mandatory requirement from an alternative source.

It was noted by the BSSG that, whilst there were some minimum specified levels for mandatory frequency response, there was no equivalent maximum i.e. the response levels derived from the commissioning compliance testing (or any subsequent re-testing) are the levels used in the response capability matrix in the Mandatory Services Agreement. It was noted that this process did not result in any 'spare' capability that could be offered for buy-out

i.e. an enhanced volume over and above the minimum mandatory requirements for a particular station. The BSSG recommended that this issue is worthy of further consideration.

Connection Conditions in the Grid Code (CC.6.3) deal more specifically with the technical requirements relating to frequency response. In particular, the requirement to:

- (i) Continuously modulate active power to contribute to overall frequency control, and the technical characteristics that must be complied with;
- (ii) continuously maintain constant active power output whilst the frequency is between 49.5 and 50.5 Hz;
- (iii) Maintain active power levels in accordance with specific requirements whilst the frequency is between 49.5 to 47 Hz; and
- (iv) Have the ability to control frequency if the generator becomes isolated from the rest of the transmission system.

In essence, it is (i) that results in the requirement to provide Mandatory Frequency Response under normal transmission system operating conditions. (ii) ensures that generators that are not providing frequency response do not contribute negatively to overall frequency control. (iii) and (iv) deal with abnormal (but possible) transmission system operating conditions. (iv) is locationally specific and is a condition that all generators must comply with to ensure that local demand can be maintained safely if that part of the transmission network is isolated.

This suggests that all generators must continue to provide the capability for frequency response to cater for abnormal transmission system operating conditions. The question remains whether the capability for 'standard' transmission system operating conditions can be separated from this, and whether any benefit could be gained by relaxing the connection conditions to remove the capability requirements for normal operation. Additionally, the question remains as to whether there is benefit in maintaining the overall obligation to provide the capability for mandatory frequency response, whilst removing the obligation for utilisation of the service, i.e. is it economically beneficial to install the capability but then not offer utilisation of the service?

The forthcoming implementation of CAP047 on 1 October 2005 will allow users to offer 'commercial' prices for the provision of Mandatory Frequency Response, rather than the cost-reflective prices they are currently obliged to submit. This will allow users to price the service at whatever level they believe is economically viable, and may reduce the driver for a requirement to buy-out of the utilisation of this service. However it must be noted that if a price is submitted such that a provider is not called to provide the service, then no payment is made.

Effectively this means that all generators must have the capability of providing frequency response in abnormal circumstances. The BSSG noted this position, and concluded that there would be significant technical issues to overcome to introduce full scale (generic) introduction of buy out arrangements for frequency response. However the BSSG considered whether a case-by-case assessment of requests for buy-out might represent a potential way forward.

5. Potential Way Forward

As stated above, the BSSG noted the significant technical issues that would need to be overcome in order to implement a full scale buy-out mechanism for all mandatory services and technical connection conditions. The BSSG has identified a number of these issues, and these are highlighted in the paper presented in Appendix A. This paper is provided so as to highlight the sort of issues that would need to be addressed if any future CUSC Amendment Proposal sought to introduce full scale buy-out arrangements.

As a potential way forward, the BSSG considered the current process employed for considering applications for derogation's from codes². The BSSG notes that derogation applications are considered on a case-by-case basis, and that the Authority, in making any decision, considers the commercial implications on the rest of the community.

At present, if a cost implication is identified, then it is possible that the request for a derogation would be refused, because (amongst other things) there is no commercial mechanism for the applicant to make a payment equivalent to the costs that he is causing i.e. to allow the applicant to make the economic choice between the costs of ensuring compliance, or the costs of not complying.

It was noted by NGC that any application for a derogation should continue to be driven by a valid short-term technical operational issue. Any commercial buy-out mechanism introduced should not be viewed as an alternative to long-term non-compliance with technical requirements, merely a short-term option.

The BSSG considers that a pragmatic way forward at this time, recognising the profound technical considerations that would need to be addressed to implement a full scale buy-out scheme, would be to consider how the current process for derogation applications could be augmented to include a commercial economic test. In the first instance this could be applied to generators who have the installed capability, but where a short-term mechanical failure has resulted in difficulties in providing the operational ability for a finite length of time.

6. Recommendations

The BSSG asks the CUSC Amendments Panel to:

- a) Note the views of the group on the subject of buy-out;
- b) Agree that the BSSG further considers the issue relating to the volumes of mandatory frequency response used in the Mandatory Services Agreements;
- c) Agree not to progress consideration of a full scale buy-out scheme at this time; and
- d) Agree that the BSSG should consider the specific application of a buy-out arrangement to the derogation process.

² An Ofgem guidance note is available at:
http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/4888_Derogation_Guidance_Note_21oct03.pdf

APPENDIX A

Buy-Out of Mandatory Obligations

As signatories to the Grid Code certain categories of generators are obligated, through their conditions of connection, to provide a number of mandatory services for use by the system operator (SO) in managing the transmission system. These include frequency response and reactive power provision.

The BSSG standing group is investigating the feasibility of introducing a form of trading or reallocating of these services. These obligations could be “sub-contracted” or “bought-out” with market forces left to identify the most efficient providers of these services.

This note identifies the main issues associated with the buy-out of mandatory service provision that would need to be addressed if such a mechanism was to be progressed. It does not draw any conclusions as to the costs or benefits of implementing such a change or advocate any proposed mechanism to facilitate buy-out of mandatory obligations.

In order to establish the feasibility of this approach to mandatory service provision the BSSG has identified a number of key areas that need to be considered.

- Trading System/Market Mechanism
- Operational Issues
- Technical Issues
- Monitoring & Reporting
- Governance

Trading System/Market Mechanism

Three commercial systems or mechanisms have been proposed for the reallocation of mandatory services. Different options may be more appropriate for the reallocation of different obligations.

1. All users opting out of their obligation will contract with NGT to cover the cost of provision on another party and as such NGT acts as the counter-party to any opt-out action. NGT sets the price of opt-out based on the cost of replacement for a fixed term. An extension to this mechanism may be to use this value as the price paid for service provision. The provider is then able to determine its cost and revenue over this period and make efficient opt-out decisions accordingly. NGT sets the value of the capability and should be comfortable to receive that payment or to pay the provider to maintain that capability.
2. Users contract bilaterally with providers willing to rent out their [enhanced] provision. Locational and monitoring considerations may make it necessary for NGT to act as a broker in this action. NGT is then able to sanction that the buy out is acceptable from a system security perspective. If the service is non-locational then there may be scope for the opt-out of services to be managed through short term contracts that are notified to the SO in time-scales that would still allow efficient system planning. The short-term nature of such a product may enhance the level of contracting liquidity.
3. All mandatory obligations are removed and the services are procured by NGT as required. These services are provided on an economic basis. The decision to provide each service is derived from the economic trade off between projected profit from provision against any increased costs associated with its installation. This proposal is advocating the removal rather than the reallocation of mandatory obligations and as such differs from the idea of mandatory buy-out. It introduces a further requirement on any implemented mechanism in that it must be able to send the correct economic signals to ensure sufficient capacity is both built and tendered. Physical entry into such a market is neither quick or without cost, These services are not often the primary drivers in constructing the plant that provides them, and it is often not possible to

retrospectively fit the ability to deliver these services. Failure to provide sufficient capacity in required time-scales, coupled with the inelastic nature of the requirement, has implications for security of supply and demonstrates the need for careful consideration of the capacity issue.

Other Issues to consider include the treatment of BMU that are currently granted derogation of mandatory provision. Would a mechanism that allowed the buy out of mandatory service provision negate the need to allow derogation of provision? Would a provider with technical limitations be able to address this by sub-contracting for the services they were obligated to provide.

Operational Issues

There must be confidence that the instruction to deliver a mandatory service or any reallocated provision is fully delivered. Any uncertainty of delivery has implications for security of supply. Certainty of delivery also enables the dispatch of these services in an economic and efficient manner. When planning and utilising mandatory services NGT will need to know the following.

- The exact technical parameters of delivery or the service
- The expected volume delivery or capacity of each service in all system frequency conditions
- The location of providers for each service

So operational functionality and procedures that must be determined include

- A clear understanding of equivalency of provision so that those providers that sub-contract their obligation understand the technical and volume delivery standards the sub-contractor must deliver.
- A clear process where buy-out terms are established, sanctioned or rejected by the SO (under agreed technical criteria which may include location), and notified to the SO in planning time-scales in order for it to economically assess and efficiently dispatch the service.
- The obligation on the sub-contracted provider to be available needs to be understood. Does the reallocated providers availability need to mimic the availability of the original provider? Do the submitted dynamics that would allow service accessibility need to be comparable?
- The changes to SO operating systems that will be required to facilitate and changes in procedures or functionality.
- Where possible, new generation connecting to the transmission system is likely to make an economic decision at construction stage whether to self provide its mandatory services or sub-contract that obligation. Any buy-out structure would need to enable any party with no provision ability to contract these services for the lifetime of the plant. Consideration would need to be given to the scenario where the sub-contractor could no longer provide these services due to bankruptcy, decommissioning or a simple disinclination to continue the provision of the service. This would have the net effect of reducing the capacity to deliver this service as well as making the original participant in breach of its Grid Code obligations. Who would be responsible for replacement of these services and how could it be achieved? Who would be responsible for ensuring there was sufficient provision to ensure system security was not compromised?

Technical Issues

There are a number of technical considerations involved with any buy-out methodologies.

- Consideration must be given to the geographical issues that will arise in the reallocating of mandatory provision from one provider to another. Reactive provision is locationally dependent and there are system security implications of geographically reallocating this service. The question must be asked to whether reallocation of reactive provision is feasible in the majority of situations. It may be that the buying out of mandatory services must be assessed on a service by service basis with acceptance that location dependent services do not fit within a re-allocable, tradable mechanism.
- There is also a provision concentration issue that must be considered. The concentration of a service on too few units could have implications for security of supply. As such it may be appropriate to identify if there is a limit in the quantity of sub-contracted mandatory provision that can be allocated to one provider or single transmission connection point.
- Mandatory frequency response is calculated as the MW response that the unit is able to provide for each point of deviation of system frequency at the units 4% droop level. In sub-contracting this provision would the new provider have to deliver the MW response matrix as stipulated in the original providers MSA. The MSA also identifies a de-load point as an anchor for determining the volume of response for each point of frequency deviation. How would this be reconciled across providers of different capacities?
- How would response provision be complicated if the sub-provider had it's own mandatory response obligations? Unless sub-contractors are exempt under the Grid Code they will need to provide response to the value of two response matrices. Given the characteristics of response provision exhibited by a number of types of generator there would need to be an assessment to ascertain whether it is possible to provide the original obligation and the sub-contracted services together at the extremities of system frequency deviation.
- Does the fact that generation with mandatory service obligations may be embedded have implications for it's ability to reallocate its provision.

Monitoring & Reporting

Monitoring of provision enables the SO to have confidence in the provider's compliance with instructions. Reducing uncertainty has commercial implications as it allows the SO to carry less contingency for possible non-delivery. The issues that should be considered in deciding upon a monitoring procedure include

- Should monitoring obligations be defined in the CUSC or the Grid code to stipulate how monitoring should take place.
- Should non-delivery result in withholding of payment for service?
- Should service provision performance monitoring be publicly available?

Governance

The governance that would oversee these new arrangements would necessitate changes in the CUSC and the Grid Code (GC).

Predominantly section CC 6.3 of the GC and CUSC sections 1.3, 4.1 and 6 as well as a number of amendments to schedule 2 & 3 would need to be addressed.

Another consideration would be the contractual relationship that would need to be implemented. This would be dependent on the market structure under which buy-out was accomplished. IT would be necessary to consider if the contracts should be

A tripartite arrangement between all affected parties

A contract solely between the SO and the original user (as now)

A contract solely between NGC and the new provider