



WORKING GROUP REPORT

CUSC Amendment Proposal CAP162 Transmission Access – Entry Overrun

Amendment Ref	CAP162
Issue	1.0
Date of Issue	19/11/08
Prepared by	Transmission Access Working Group 1

Responses to this company consultation should be sent to patrick.hynes@uk.ngrid.com by xx December 2008.

I DOCUMENT CONTROL**a National Grid Document Control**

Version	Date	Author	Change Reference
Issue 1.0	19/11/08	CAP162 Working Group 1	

b Distribution

Name	Organisation
The Gas and Electricity Markets Authority	Ofgem
CUSC Parties	Various
Panel Members	Various
National Grid Industry Information Website	

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1.0 SUMMARY AND RECOMMENDATIONS

Executive Summary

- 1.1 CAP162 Transmission Access – Entry Overrun seeks to introduce a commercial mechanism for dealing with the situation where a power station exports above its sum of transmission entry access capacity holding.
- 1.2 The CAP162 proposal would permit generators to export in excess of their total transmission entry access capacity holding. Their level of export (onto the transmission system) would only be capped by “local” rather than “wider” transmission system capability limits. The additional volume of transmission access used above the sum of transmission access capacity holding would be known as ‘Entry Overrun’.
- 1.3 The charging arrangements (codified in the charging methodologies) for Entry Overrun would establish a cost reflective charge for Entry Overrun, and consistent with facilitating competition.
- 1.4 The CAP162 amendment includes a revised process for ‘local only’ applications (which would allow connection without long-term entry rights for the wider transmission system). The CAP 162 Original Amendment also proposes a change in the nature of transmission entry rights from nodal to zonal. The zones used would be consistent across all long-term and short-term transmission access products..
- 1.5 There is one Working Group Alternative Amendment proposal that proposes to retain a nodal definition to the transmission entry rights, this reflects difficulties encountered in establishing suitable zones. For the avoidance of doubt, National Grid expects that the charges will be based on the nodal (Power Station) metered output and not sum of company zonal metered output as intended in the Original.
- 1.6 National Grid, as the proposer of CAP162, suggests that in order to ensure equitable treatment of non locational transmission asset costs that the residual charge should be treated in a different manner than under existing arrangements. The proposer also suggested that all Users should contribute to the residual charge.
- 1.7 The CUSC Amendment Panel established two Working Group to assess different aspect of the modification. Working Group 1 assessed the principle of overrun. Working Group 3 supported Working Group 1 by assessing the zonal definition and local only connection process. Both of the Working Groups were also tasked by the Transmission Charging Methodologies Forum to investigate the charging aspects of the proposals.
- 1.8 The Working Groups have consulted in accordance with the CUSC and the responses are included as Volume 2 to this report.
- 1.9 National Grid is intends to publish an open letter on the related charging arrangements during the Company consultation period.

Working Group Recommendation

- 1.10 The Working Group believes its Terms of Reference have been completed and CAP162 has been fully considered. The Working Group unanimously

agreed that the WGAA was better than the baseline and also better than the Original proposal. At the final meeting on 18 November 2008 fifteen Working Group members cast votes:

Voting Results	For	Against	Abstain
Original better than Baseline	2	10	3
WGAA better than Baseline	15	0	0

- 1.11 The Working Group also voted on which of the Original or the WGAA better meets the CUSC applicable objectives:

Voting Results	For
Original best	0
WGAA1 best	15

- 1.12 The Working Group recommends to the CUSC Panel that:

- A consultation report containing the CAP162 Original and the WGAA should proceed to wider Industry Consultation as soon as possible.
- The Working Group report is accepted by the CUSC Panel and the Working Group is disbanded once legal text has been agreed.

CUSC panel Recommendation

- 1.13 *The CUSC panel accepted the Working Group report on xxx November 2008 and recommended that National Grid proceed to company consultation as soon as possible in accordance with the CUSC.*

Responses to company consultation

- 1.14 Parties are requested to respond to this Working Group consultation by the date on the front cover to Patrick Hynes at patrick.hynes@uk.ngrid.com, or send written responses to:

Patrick Hynes
UK Transmission Commercial
NGT House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

If you have any queries please do not hesitate to contact Patrick on 01926 656319. All responses will be published on National Grid's website and included in the final report to the Authority.

- 1.15 Following acceptance of the Working Group report by the CUSC Panel National Grid will carry out a Company consultation.

2.0 PURPOSE AND INTRODUCTION

- 2.1 This report summarises the discussions by a CUSC Working Group on CAP162 Amendment Proposal as well as the Working Group Alternative and details the responses to the Working Group Consultation.
- 2.2 CAP162 was proposed by National Grid and submitted to the Amendments Panel for their consideration on 25th April 2008. The Amendments Panel determined that the proposal should be considered by a Working Group and that the Group should report back to the Amendments Panel meeting within 3 months following a period of Working Group Consultation. The Panel and Ofgem subsequently agreed a further 2 month extension to these timescales.
- 2.3 The Panel established CAP162 Working Group (also known as “Working Group 1”) to assess CAP162. In addition the Panel established a separate group (known as “Working Group 3”) to assist the Working Group 1 in defining and assessing CAP162. Both Working Groups were also tasked by the Transmission Charging Methodologies Forum in developing consequential charging methodology changes associated with CAP162 in parallel with the CUSC assessment. Working Group 3 is a sub Group of the Working Group 1 and Working Group 2 (separately constituted and looking at the nature and allocation of longer term transmission access rights).
- 2.4 Working Group 1 was also tasked with reviewing a number of other short term transmission access amendment proposals. A copy of the Terms of Reference for Working Groups 1 and 3 is provided in Annex 3. The Working Groups considered the issues raised by the Amendment Proposal and considered whether the Proposal and the Working Group Alternative better facilitated the Applicable CUSC Objectives.
- 2.5 This Working Group Report has been prepared in accordance with the Terms of the CUSC. An electronic copy can be found on the National Grid Website, www.nationalgrid.com/uk/Electricity/Codes/, along with the Amendment Proposal Form. A copy of Working Group Consultation responses are contained in Working Group Report Volume 2 on the National Grid Website, www.nationalgrid.com/uk/Electricity/Codes/,

3.0 PROPOSED AMENDMENT

- 3.1 CAP162 seeks to create a commercial mechanism for dealing with the exporting of power, by a power station, above that power station's existing transmission access capacity holdings.. The full text of the CAP162 amendment is set out in Annex 5 of this report.
- 3.2 CAP162 would permit Generators to export in excess of their total transmission access capacity holding¹, capped by "local" rather than "wider" system capability limits (e.g. CEC and any local transmission limits as detailed in the bilateral agreement), and subject to continued Grid Code compliance. The additional volume of entry access used above total entry access capacity holding would be known as 'Entry Overrun'.
- 3.3 For the purposes of the original CAP162 amendment, it is suggested that the charging arrangements for Entry Overrun would establish charges related to the cost imposed through accommodating Entry Overrun i.e. a cost reflective charge, treating Overrun as a service. The charged were expected to be determined on an aggregated company zonal basis.
- 3.4 The proposal highlighted credit implications with Overrun. Depending on the pricing methodology and the volume of Overrun, a Generator could expose itself to large costs in a very short space of time. The credit implications have been considered by the Working Group, and the detailed requirements included in the final drafting.
- 3.5 CAP162 includes a revised process for 'local only' applications (connection without long-term entry rights for the wider transmission system) and a change in the nature of long-term and short-term entry rights from nodal to zonal. The zones used would be consistent across all long-term and short-term transmission access products. National Grid, as the proposer of CAP162, suggests that in order to ensure equitable treatment of non locational asset costs that the residual charge should be treated in a different manner than under existing arrangements. The proposer also suggested that all Users should contribute to the residual charge.
- 3.6 The Working Groups have developed a Working Group Alternative Amendment, WGAA1, which defines the transmission entry access capacity on a Power Station rather than zonal basis. Along with this National Grid indicated that the charges for WGAA1 would be determined on the metered output of a Power Station rather than on an aggregated company zonal basis as envisaged for the CAP162 Original.

4.0 SUMMARY OF WORKING GROUP 1 DISCUSSIONS

- 4.1 The Working Group recognised that whilst the CUSC permitted the principle of Overrun the commercial decision to use Overrun by company would be mainly driven by the Overrun tariff derived from the charging methodology. This report presents a broad outline of the proposed charging arrangements that have been discussed to aid the reader although do not form part of the CUSC. The general options and outline principles for charging are discussed below. Readers should be aware that Charging methodologies governance is

¹ Total transmission capacity holding is currently determined as the sum of a generators' holding of TEC, LDTEC & STTEC, as defined in the CUSC). A generators' export (onto the transmission system

separate to that of the CUSC and that the proposals discussed below are still under development. Further discussion and consultation may lead to changes to or result additional proposals that better meet the charging objectives. All charging methodology changes are consulted upon by National Grid before being presented to the Authority.

- 4.2 Permitting parties to exceed their entry transmission access capacity holding would also have a number of impacts on other processes within the CUSC and framework documents. These are also considered in this report.

Charging background

- 4.3 In the original CAP162 amendment proposal, National Grid indicated its intention to consider a number of possible methodologies that vary the balance of cost reflectivity, simplicity, transparency, implementation cost and timescales. As a result, the Working Group considered 3 possible alternatives for Overrun pricing:

- i) Simple methodology;
- ii) Cost Recovery methodology; and
- iii) Marginal methodology.

- 4.4 The Original amendment proposed that settlement and charging processes would be based on zones, and by company (registered CUSC party). Any output above their contracted transmission access level would be charged at the cost of facilitating that Entry Overrun by National Grid. Timescales for settlement will be broadly similar to BSUoS timescales (1/2 hour settlement periods with a 28 day rolling settlement).

- 4.5 These methodologies are described briefly below, but are the subject of a separate charging governance arrangements.

Simple Methodology

- 4.6 The Working Group considered 3 potential methodologies for charging Overrun under the Simple Methodology. These were:

- i) $X * TNUoS^2$ (where X is a multiple or “Scalar”)
- ii) $X * BSUoS^3 [-RCRC^4]$ (where X is a multiple or “Scalar”)
- iii) Imbalance/Market-price based.

- 4.7 TNUoS is an asset based signal and so bears little relationship to the real time transmission system costs, which are influenced by real time availability of the transmission system as well as the availability, location and price of generation and the level of demand. The Working Group agreed that TNUoS was not a good proxy for short-run transmission access costs and so the $X * TNUoS$ option was not favoured by the Working Group.

- 4.8 The Working Group also discussed but rejected the Imbalance/Market-price based methodology as energy effects would be included in the Overrun price and it would not reflect differing costs of Overrun in different locations. The

² TNUoS – Transmission Network Use of System – asset based charge related to long-term access on wider transmission system

³ BSUoS – Balancing Services Use of System – charge based on cost incurred by SO in operating the transmission system

⁴ RCRC – Residual Cashflow Reallocation Cashflow – reallocation of cash flows collected from dual imbalance pricing in the Balancing and Settlement Code

Working Group agreed that a Simple Methodology based on a multiple of BSUoS or BSUoS minus RCRC would potentially offer the most appropriate solution as this would reflect short-term constraint costs through BSUoS.

- 4.9 National Grid carried out detailed analysis on the correlation between transmission system constraint costs and (i) BSUoS and (ii) BSUoS minus RCRC for 3 years: 2005/6, 2006/7 and 2007/8. This analysis mapped over 250 constraint boundaries and their associated half hourly costs to 24 zones.
- 4.10 This basic process and most of the data used in the Simple methodology is the same as would be required for a “degut”⁵ of constraint costs for the Cost Recovery methodology (see below). However, the volume of overrun is unknown ex ante. Therefore the cost attributed to the constraint is divided by the volume of the constraint. This provides the average historical cost of overrun when the constraint is active.
- 4.11 The results of the initial correlation analysis showed that the best correlation was achieved for ‘BSUoS minus RCRC’ versus ‘constraints’ on a half-hourly basis, providing a greater than 40% correlation. When zero constraint periods were removed the correlation (R^2) increased to ~50%. After removing periods 22:30 to 07:00 (which account for ~10% of system constraints) the correlation drops to ~35%. Results for BSUoS alone and for daily, weekly and monthly values showed much lower correlations.
- 4.12 The Working Group felt that this analysis provided a reasonable basis for calculating Scalars which defined a relationship between BSUoS–RCRC and constraint costs. The Scalars would be published ex ante on National Grid’s website. The complete data set available to National Grid for constraints starts from April 2005 (BETTA go-live), this lead to the initial analysis for calculating the Scalars being carried out on 3 years of historical data.
- 4.13 The Working Group discussed whether the Scalar could be switched off if no constraints were active i.e. no Overrun charging when there is no active constraint on the transmission system. This approach is consistent with calculating the Scalar when the constraint is active. One option discussed for switching Scalars on/off was to use historic information showing which periods were constrained and non-constrained. This option is relatively simple to implement but is not necessarily an accurate guide of when future constraints will or will not occur.
- 4.14 An additional options approach would be to set some manual switch which would be notified after the event by National Grid. This would give a more accurate indication of when constraints were active but this option would add a degree of complexity and being notified ex post would reduce the benefits of the Simple Methodology. An further option discussed would be that there would be no switching - all settlement periods would be classed as “active” and Overrun would be charged accordingly (albeit that the Overrun costs would be expected to be lower in less constrained periods as BSUoS minus RCRC should be relatively low). However there was concern that a constant ‘active’ status would lead to grossly over-recovering of transmission charges.
- 4.15 After further discussion and investigation National Grid agreed it could produce a zonal on/off switch based on predefined zones and settlement period, including an import and export flag, 2 business days after the day in question.

⁵ “degut” -the exp post process for apportioning operational costs to real time events or conditions

- 4.16 National Grid presented the initial indicative results of the analysis showing time- and volume-weighted Import and Export Scalars for each of the 24 zones considered. These are presented in the charging consultation.
- 4.17 The Working Group felt that the Simple Methodology did have some considerable advantages over the other methodologies in that it was a simpler approach yet gave a reasonable proxy for the costs of Overrun. The most significant advantage of a Simple Methodology is that through the ex ante publication of scalars and a markets participant's forecast of BSUoS costs it provides an opportunity for estimating before the event the possible costs of overrunning, albeit that this would be an upper end estimation because the on/off switch is notified ex post. Therefore the simple methodology provides an opportunity to decide, based on the estimated cost, whether to overrun or not.
- 4.18 Following discussion of the issues raised in the CAP162 and CAP164 Working Group consultations National Grid indicated that it also expected to bring forward for consideration a wholly ex ante version of simple overrun. This would be developed with the Transmission Changing Methodologies Forum (TCMF). Whilst such an option may be less cost reflective it would provide greater certainty for developers and enable a greater volume of projects to utilise overrun.

Cost Recovery Methodology

- 4.19 The original CAP162 amendment proposal contained a strawman based on the Cost Recovery Methodology to address short-term transmission access charging. This is included in Annex 5.
- 4.20 The Working Group considered the principles of Overrun charging under the Cost Recovery Methodology and agreed the following:
- Overrun is charged on a per-BMU basis per-half hour settlement period
 - Metered values rather than FPN values are to be used in calculating Overrun charge. The metered values will be adjusted for any bids taken.
 - Parties pay an Overrun charge even when they have accepted offers.
 - Parties are not liable to Overrun charges if responding to an Emergency Instruction (as defined in the Grid Code).
 - Balancing actions taken outside the zone due to an overrunning party should be included in Overrun charges as National Grid is covering balancing actions (within and outwith the zone) due to the constraint arising from the Overrun.
 - Overrun charges would include all costs incurred, by National Grid as the GBSO, due to the overrunning parties whether taken in the Balancing Mechanism ("BM") or outside of the BM (i.e. intertrip costs or warming contracts etc...)
 - The most expensive bids are to be tagged against the overrunning party.
- 4.21 Cost Recovery differs to the Simple methodology in that in the Cost Recovery methodology the 'degut' cost of the constraint is divided by the actually volume of overrun in the period the cost was incurred.

- 4.22 The Working Group discussed at some length the possible inclusion of negative Overrun charges in the Cost Recovery Methodology. Some Working Group members felt there should be symmetry between overrunning in an export group (thereby incurring a positive charge) and overrunning in an import group (thereby incurring a negative charge). In principle a payment could be made for Overrun where it was deemed to have benefited the transmission system, but this is difficult to do and was not initially envisaged.
- 4.23 The overrun charging sub group believed, in terms of establishing a benefit, the analysis would be much more complicated than establishing the cost as the avoided cost is not currently recorded. National Grid indicated it was possible to replicate the control processes and recalculate actions ex post assuming overrun had not taken place, although this would be a very resources intensive and extremely subjective process.
- 4.24 The working group agreed that accurate negative pricing was practically unachievable in the Cost Recovery methodology when considered in conjunction with criteria i.e. transparency, objectivity and auditability.
- 4.25 National Grid indicated that it viewed negative pricing as a characteristic of a particular charging methodology not a principle of Overrun charging per se. The Working Group agreed therefore that **no** credit should be given for Overrun that reduces cost (i.e. where cost is negative the Overrun charge is to be set at zero) under the Cost Recovery methodology. This is discussed in more detail in the consequential charging consultation where National Grid is requesting Industry views. To an extent, although not completely, parties would be able to guard against overrun charges considerably higher than they wished to incur by setting an appropriate bid price in the Balancing Mechanism.
- 4.26 The Working Group considered the pros and cons of the Cost Recovery methodology. On the plus side, it would be cost reflective and target the additional costs arising from Overrun back to the parties causing them (which was the intention of the original CAP162 amendment proposal). However, the Working Group felt that targeting these costs would be difficult to achieve and would inevitably entail a high degree of subjectivity due to the nature of the transmission constraint tagging methodology.
- 4.27 The current systems that are used within National Grid to degut operational costs were developed as in house systems to monitor and manage BSUoS, but were never developed for external publication. To provide the robustness and auditability required for published auditable half hour tariffs within a specified time after gate closure National Grid would expect to undertake some development of the existing system systems. Further developing existing systems to produce negative tariffs for the Cost Recovery methodology would be costly and require a longer implementation period (e.g. it may not be ready for implementation on 1st April 2010). This problem is not as acute in the Simple methodology as it uses the cost and volume of the constraint averaged over a longer period of time, although the on off switch would have to be produced daily.
- 4.28 As the Cost Recovery methodology calculates ex post Overrun charges parties would not be able to make a reasoned economic judgement, prior to them occurring, about whether to Overrun in any particular settlement period. The Working Group felt that this was a significant defect of the Cost Recovery Methodology.

Marginal Methodology

- 4.29 The Marginal Methodology would calculate the marginal cost of short-term transmission access at each node, and this would be aggregated into zones, deriving a Locational Marginal Price (“LMP” for energy and transmission access), and then this would be converted into a locational Short Run Marginal Cost (“SRMC”s for the price of transmission access). LMP based methodologies are used in a number of electricity markets throughout the world, most notably the PJM market in the USA. The proposed methodology is considered as an equivalent for the GB market arrangement reflecting the differences in the energy markets (GB has a net pool not a gross pool).
- 4.30 National Grid developed a simple 12-node model and presented the results to the Working Group. This model was used to demonstrate the principles of SRMC price calculation under a number of scenarios. The model is available on the Working Group CUSC website⁶. The model has been reviewed by the Centre for Sustainable Electricity and Distributed Generation (“SEDG”) at Imperial College, who confirmed that it correctly demonstrated the principles of SRMC calculation⁷.
- 4.31 The Working Group discussed the Marginal Methodology and opinion was divided as to whether this methodology gave an ‘appropriate’ result. Some Working Group members felt that the Marginal Methodology would provide the efficient costs of short-term access at various locations on the transmission system, whilst others either did not fully appreciate how exactly the methodology produced results or felt that the signals were too sharp and would be volatile. It was agreed that a principle of the marginal methodology is to provide a signal, whereas the other methodologies, to a greater or less extent, were more focused on costs recovery and avoiding any excessive additional costs on other parties who contribute to BSUoS.
- 4.32 The majority of the working group agreed that the Marginal Methodology was complex and had not been tested sufficiently to enable the Working Group to be confident, at this stage, with its output. The methodology is likely to be costly and time-consuming to implement, and is extremely unlikely to be ready by 1st April 2010.
- 4.33 Other members of the working group felt that the objective nature of the calculation and timely production of short run prices were important factors in facilitating the economic use of the transmission system and providing a correct incentive for long term investment. Therefore whilst it may not be implemental for April 2010 it should not be ruled out for further development and implementation in the future.

Comparison of the Overrun Costing Methodologies

- 4.34 The discussion on the merit of each methodology is detailed in the Charging pre consultation, GBECM 14. The assessment of the charging methodology will be against the applicable charging objectives.
- 4.35 National Grid intends to produce an open letter to aid readers of the Company consultation on CAP162 with understanding the latest position of the associated charging developments. This will summarise National Grid’s initial thoughts and the responses to charging pre consultation GBECM14.

⁶ <http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/workingstandinggroups/wg161-164/>

⁷ <http://www.sedg.ac.uk/>

Interaction with the provision of Balancing Services (including services such as frequency response, MaxGen Service and black start)

- 4.36 National Grid's original assumption was that all bids and offers would also need to be exposed to Overrun. In the case of bids this is because Overrun parties do not have transmission access so should not receive compensation payments when their output cannot be accommodated.
- 4.37 In the case of offers National Grid suggested that if overrunning parties did not face transmission access Overrun charges they would effectively be provided with an advantage in the BM over other Generators who had purchased transmission access rights (and thereby had to recover those costs in their offered prices). Relaxation of this principle would have negative effect on competition and ramifications for all services provided to National Grid.
- 4.38 Whilst most of the group accepted this point, concern was expressed that under emergency conditions it may not be appropriate to limit provision of additional plant through transmission access charging. The Working Group agreed that Generators would need to factor the risk of high Overrun charges in their offer charges if they were not granted access rights when offers were accepted. Under emergency conditions extreme prices may deter parties from offering additional capacity at less than extreme prices.
- 4.39 The Working Group agreed that for Emergency Instructions (as defined in the Grid Code) transmission access rights should be deemed as granted with the instruction. It was recognised that with much more flexible transmission access arrangements then the need for MaxGen may actually reduce. The Working Group agreed CAP162 should not remove MaxGen from the CUSC.

Settlement process, including resolution of settlement (e.g. half-hour)

- 4.40 The proposal is that transmission access settlement should be carried out on a half-hourly (settlement period) basis. The Working Group agreed. Although there may be sub-half-hour issues these effectively existed now with TEC and so should not be viewed as a barrier.
- 4.41 The Working Group agreed that changing to a sub half hour regime would have extremely significant implications for Settlement metering process and is unlikely to be justified given most members views that overrun will be regarded as a secondary product compared to firm access.

Interaction with cashout in the BSC

- 4.42 The Working Group agreed the CAP162 proposal was unlikely to unduly interact with BSC cash out prices, although there would be a linkage as constraint prices were expected to be higher when cash out prices were higher. The Working Group acknowledged that the cash out review and attempts to remove constraint costs from the energy imbalance charges (P217) was relevant to overrun charges.
- 4.43 The group discussed the option of seeking to remove the implications of market length from the calculation of overrun prices. However the majority of the group believed that the Overrun charge should, as far as practicable, reflect the costs imposed on operation of the transmission system.

- 4.44 A request for a consultation alternative was raised by EDF Energy that sought to remove the linkage to the Residual Cashflow Reallocation Cashflow. The Working Group agreed this was worthy of further discussion, however it was a charging issues and should be discussed under the TCMF. National Grid agreed to take the proposal forward for discussion through the charging governance.

Ensuring that the arrangements do not unduly discriminate against any particular plant type or range of plant types

- 4.45 The Working Group felt that Overrun would probably be used as an incremental option by generators and would be used to supplement, but not replace, long-term access to the transmission system. The Working Group discussed whether certain types of generation plant would use Overrun more than others.
- 4.46 Some Working Group members felt that weather dependent generators, such as wind and hydro, may seek to secure long-term transmission access to accommodate a certain proportion of their expected output and then either procure short-term transmission capacity (if procurable close to real time) and/or Overrun for the least predictable proportion of their output. The associated costs may preclude this, particularly if they choose to overrun at times when energy supply/demand and transmission capacity is tight. Although in areas of high TNUoS charges and very low load factors at high output ranges Overrun may well be attractive. Such treatment is not unlike the sizing of various modules of a Power Station (prime-mover, generator transformer, alternator etc.) to provide flexibility throughout its lifetime and meet standard procurement sizes.
- 4.47 Some Working Group members felt that in the long term, if and when high levels of weather dependent generation connected to the transmission system that in order to provide higher plant margins, Overrun would be an economic product for plant that mainly replaced, for example, wind on non windy days. Under this scenario the replacement plant could potentially have a free transfer of transmission access from the weather dependent generation by utilising Overrun on windy days. This is because on non-windy days renewable plant would not be utilising their long-term access holdings and so the short-run access products may be relatively low cost or even zero. This would improve investment signals for Transmission Licensees as parties were not forced to purchase TEC to access the energy market, but opting to take the risk on sharing via overrun.

Additional information transparency

- 4.48 The Working Group discussed that for Overrun to be useful generators would need to have greater transparency of transmission system capacity so that they could judge the likelihood of a constraint arising (along with the risk of the associated Overrun charges occurring).
- 4.49 National Grid was concerned that releasing transmission system constraint information very close to real time, even ex ante, would provide inappropriate incentives for generation companies, which could lead to an overall increase in the cost of operating the transmission system. However, if there was information that could be made available without this risk this should be considered.

- 4.50 National Grid indicated that, in terms of Users' data, where this has been supplied to National Grid by a User, for National Grid to publish it would require an obligation in the CUSC (or other Licence code) that released National Grid from confidentiality obligations in the CUSC. System information that was not specific to a User could be released without an obligation in the Code if it was believed there was an overall benefit to the market.
- 4.51 National Grid noted that whilst constraints on the transmission system were the reason for cost, the actual magnitude, the main driver for the costs, were generation bids and offers. Ex ante this information is not available, but it is available ex post. Indeed all bids and offers accepted in the Balancing Mechanism are available very short after real time. Furthermore, under the Grid Code National Grid already provides generators with the annual transmission outage plan and information on outages that have a direct bearing on the physical operation of their plant.
- 4.52 National Grid also acknowledged that for day 1 Parties would not have historic information. Therefore, as part of the implementation of CAP162 additional information or simulated historic prices would need to be published. It was noted that the Scalars produced for the Simple methodology presented the average cost of constraints over a period of time, and that a marginal equivalent could also be considered for publication during the development of the charging methodology.
- 4.53 It was noted there was also an interaction with the submission of Physical Notifications ("PN"s). Any information made available would need to be sufficiently in advance of the submission of Physical Notification in order to be of any value i.e. in sufficient time for parties to respond in the commercial market and submit new PNs.

Application process and impact on bilateral agreements for short-term access

- 4.54 The right to Overrun was envisaged to be set out in the CUSC. The local connection bilateral agreement would specify a Local Capacity Nomination, LCN, (MW) which would cap the sum of all access products and Overrun. Generators would not be permitted to exceed this LCN (MW) limit, irrespective of whether they were overrunning or not. Working Group 3 developed the LCN concept and this is discussed in Section 5.

The impact on System Operator costs, internal and external

- 4.55 The Working Group agreed that there would be an impact on GBSO costs. The cost of operating the transmission system is expected to increase as a result of CAP162 being implemented. In order to ascertain the impact on GBSO costs the Working Group discussed the revenue flows associated with Overrun (see diagrams in Annex 7).
- 4.56 Under the Simple Methodology and Cost Recovery Methodology the overall cost to BSUoS payers is largely expected to be neutral as it's believed that these methodologies will generally hold third parties whole to the cost of Overrun. This is considered to be more so with the Cost Recovery methodology. The simple methodology will not hold parties whole in any particular half hour period although it is designed to average out over a full year. In both the Simple and Cost Recovery methodologies the simplification and subjectivity will affect the overall accuracy.

- 4.57 Under the Marginal methodology, by design it is providing a signal and not aiming to be cost neutral, therefore it may over or under recover. As with the other methodologies it is assumed that this will be netted in BSUoS, e.g. a large over recovery would be passed back to the market generally in a lower BSUoS price. As discussed earlier, the Working Group consider that Overrun volume would be relatively limited, however some Working Group members suggested that it was the signal from the short run price that was important as this drove how the other long and short term transmission access products functioned. Therefore the production of an accurate short run price that is consistent with other access products is a key element of a well function market, along with other elements such as transparency, liquid secondary trading and well defined rights.
- 4.58 All of the methodologies would require daily settlement to be developed. For the Simple and Cost Recovery methodologies this was the critical path for implementation. In order to meet April 2010 detailed scoping of daily settlement systems needs to commence by December 2008 and development works (subject to the scoping) are expected need to have started by March 2009.
- 4.59 For the Marginal methodology the implementation of the tariff calculation software would be the critical path. Some of the Working Group members considered that a phased implementation would be appropriate, e.g. use of the Simple methodology until either the Cost Recovery or Marginal methodologies (which ever was successful) could be implemented.

A cost benefit analysis, including market impacts and the cost of carbon⁸

- 4.60 The Working Group consultation requested views on the take up of overrun. This would assist the Working Group in determining how many additional MWs might come on line and/or how much generation with existing full access might convert to a mixture of firm and less firm (overrun) access.
- 4.61 The majority of respondents indicated that they would regard overrun as a secondary product given the risk in any individual period and expected higher cost of overrun over a longer period compared to TNUoS in constrained zones. Furthermore overrun may not be an appropriate product for new developers who required a bankable product. It is recognised that the bankability is dependant on the charging methodology, and an exante product may be bankable, but nevertheless most Working Group members and respondents believed Overrun was not a primary product.
- 4.62 A number of Working Group members indicated that the suite of short term proposals detracted from other models such as connect and manage so would have a detrimental impact on the development of renewables.
- 4.63 As discussed previously National Grid noted that providing Generators with a choice of short term products, long term products, along with the options of sharing and bilateral trading relied to a certain extent on a reference price. Therefore the value of an accurate and consistent overrun price should not be judged only on take up. A short term price that is too low could undermine

⁸ Taken account of Ofgem guidance with respect to:
<http://www.ofgem.gov.uk/Licensing/IndCodes/Governance/Documents1/Code%20objectives%20letter%20-%20final%20for%20external%20publication.pdf> (note link to CUSC Working Group established on carbon analysis)

investments and thus security of supply. Likewise a short term price to high would inflate the price of other products and possibly encourage over investment. It is recognised that investment is not solely driven by market signals from entry parties and that a review of how the Security and Quality of Supply Standard interprets market based signals and the need to provide a level of demand security.

- 4.64 The Working Group did not believe it was reasonable to make unfounded assumptions as to the level of renewable plant that may be advanced as a result of overrun. Most members of the group felt that it would be relatively low volume, however in conjunction with other proposal there would be an appreciable affect. Therefore the Working Group did not produce an explicit cost benefit for carbon. However, given that overrun largely mitigated the costs on third parties any additional low carbon plant would deliver a significant proportion of carbon benefit on a unit basis compared to the cost.
- 4.65 In terms of overrun alone, National Grid suggested that if all wind parties reduced access by 10%, or possibly more, because their actual generation at the top end of their capacity was extremely low (e.g. 5% of the output provided by the last 20% of capacity), such an effect should free up the same amount of capacity to bring forward additional projects (subject to the SQSS review). Other Working Group members doubted the effect would be this pronounced.
- 4.66 The working group discussed if avoided transmission investment should be taken account of in any cost benefit. The general consensus of the working group was that transmission was being provided as quickly as possible so avoided transmission investments should not be considered. National Grid suggest that a market based signal for users willingness to share through overrun and other products should improve investment signals over an administered figure for sharing in the GB SQSS. In the long term this may avoid the risk of over investment.
- 4.67 In terms of the charging methodology the Working Group members were concerned that the expect large IS costs involved in a marginal or even providing a robust Cost Recovery model prohibit their development until overrun has been established as a useful product. Some member of the group reiterated views expressed in responses to the Working Group report that the difference between Simple and Cost Recovery model was limited in terms of implementation. National Grid indicated that whilst they largely used the same data, in the cost recovery model the need to process a produce a tariffs shortly after real time was more difficult that providing a table indicating which constraint zones were active.
- 4.68 Therefore most Working Group members indicated implementation with the simple charging mechanism initially would be most efficient. This would provide most of the benefits of overrun, whilst largely protecting third parties. In order to justify a marginal model a more robust cost benefit analysis would be required once firmer implementation costs could be established.

Efficient investment signals (for generation, transmission & interconnectors)

- 4.69 The Working Group considered whether Overrun should be restricted to use by a User that has applied for TEC, or whether it should be available to all Users. The argument for the former is that it encourages Users to commit to capacity and thus justifies transmission investment, as opposed to procuring short-term transmission access, and thereby the losing the correct investment

signal. There is a counter-argument that it may be more efficient for some plant to be able to generate and pay Overrun without additional transmission investment being made. The Working Group identified this as an important area but there were differing views.

- 4.70 Providing that Overrun was priced reasonably cost reflectively most of the Working Group felt it was not a primary product for the majority of entry parties. Therefore National Grid would still receive investment signals through purchase of TEC.
- 4.71 How the signals from short and long term purchase affected investment and interacted from signals from demand participants and influenced investment was recognised as a Security and Quality of Supply Standards (SQSS) issue. The Working Group noted that a review has been initiated in the SQSS
- 4.72 A respondent to the Working Group consultation support a direct link between short term costs and the provisions of new capacity. The Working Group discussed this issue, recognising this is mainly a GB SQSS and price control issue. The Working Group considered that the TO investing on ST signals could disincentivise users of the system to book long term capacity as they would rely on the Transmission Licensees to book capacity. Some members of the group considered this the role of the Transmission licensees whilst others recognised the need for users of the system to book capacity in advance to provide signals for investment. National Grid indicated that building capacity on short term signals alone could lead to periods of capacity shortages given the lead time for transmission reinforcement.

Eligibility

- 4.73 The Working Group considered that Overrun was only applicable to CUSC Users who had a bilateral generation connection agreement (BCA or BEGA) with National Grid, be they directly connected or embedded. For the avoidance of doubt, parties who have a BELLA agreement are not eligible for overrun
- 4.74 Any generator who is embedded would be able to benefit from Overrun by applying for a local connection to National Grid. This would ensure that the local transmission assets were able to facilitate overrun from the embedded generator. The charging arrangements for local assets are separate and covered in the charging methodology. The wider implications associated with embedded generation e.g. should there be a GSP export product charge (net exit arrangement) or a more direct charge (gross arrangement), are not dealt with under this amendment proposal.
- 4.75 The Working Group acknowledged that the wider arrangements for embedded generation are being reviewed and it is envisaged that any future changes to these will address any TAR related issues.

Definitions, including the interaction with other codes and methodologies, and Offshore arrangements

- 4.76 The Working Group believed that Overrun would have limited impact on other industry codes. The Working Group recognised that there could be

implications on investments and understands this is being addressed in the 'GBSQSS fundamental review'⁹.

- 4.77 There would be a number of process and obligation changes in the STC to facilitate the revised local connection arrangements.
- 4.78 The impacts on charging methodologies have been discussed by the Working Group and National Grid has issued a pre consultation based on the Working Group discussion.
- 4.79 There may be some consequential changes to information flows to and from the BSC, these will be investigated and addressed in post acceptance analysis. Some respondents noted the interaction with the RCRC element. The Working Group discussed this linkage and agreed that this was by design, i.e. a deliberate attempt to remove the effect of varying energy imbalance from the overrun price. National Grid agreed to consider this effect under charging governance.
- 4.80 The Working Group noted that the netting of BSUoS would not take place until after the II run. Therefore the accuracy of the BSUoS II statements may be slightly affected. Should volumes become large the Working Group considered that it may require a material IS development to be undertaken which is unlikely to be justified for the initial implementation of CAP162. The Working Group was comfortable that this effect, given the expected small volume of overrun, providing it was made clear to users.
- 4.81 The Working Group did not identify any adverse impact of CAP162 on the proposed offshore arrangements, although considering their stage of development believed assessment against the final offshore arrangements would need to be assessed by Ofgem.

Payment, Credit and Security

- 4.82 The Overrun tariff cannot be predicted as it will depend on the methodology being developed. The proposal is that new Users would generally be required to forecast volume of Overrun (subject to existing forecast arrangements for BSUoS). From this, National Grid would (i) forecast the Overrun tariff and (ii) notify Users of the appropriate security required for 29 days. This would be monitored, by National Grid, until the volume was reasonably predictable. If the volume of Overrun was larger than forecast there may be a need for Users to increase their security cover or alternatively the User would have to stop overrunning. This would require review after a set period and changes would be raised as appropriate.
- 4.83 The Working Group agreed that it was appropriate to have adequate credit and security arrangements in place for Entry Overrun. The Working Group modelled the requirements on those of BSUoS currently in the CUSC. The agreed payment, credit and security arrangements are:
- ◆ Daily charging for overrun, tariff derived from Overrun methodology
 - ◆ Payment 29 days in arrears (consistent with BSUoS / BSC)
 - ◆ DD / prepayment
 - ◆ Security required for forecast charges

⁹ <http://www.nationalgrid.com/uk/Electricity/Codes/gbsqsscode/fundamental/>

- ♦ Approximately 29 days of cover
 - ♦ Bill every two weeks for previous two weeks (-2BD), based on best available data from II run
 - ♦ For example, on 15th of month
 - ♦ Bill for previous 21 to 7 days (2 weeks)
 - ♦ Payment on starts on 21st and daily through to 21st +14 days for the previously billed days
 - ♦ Overrun would not be taken account of in Logica II 'BSUoS advice note'
 - ♦ Overrun would feed into Logica SF run which initiates BSUoS payment (i.e. BSUoS payment should take account of Overrun receipts)
 - ♦ Reconciliation at end of financial year, by end of April, result feeds in to BSUoS reconciliation (May)
- 4.84 The arrangement above would only leave 1 day's notice of terms under certain circumstances (time from billing to payment). Therefore National Grid is proposing weekly billing that would be closer to the BSUoS timescales (daily). The 2 weekly billing process was designed to avoid significant system changes, moving to weekly billing will increase the potential for IS systems changes and may slightly increase the resources involved. National Grid will be scoping out the detailed IS requirements which are linked to the manual resources.
- 4.85 For the avoidance of doubt, reconciliation does not include changes the published Overrun tariff (or any on /off switch), but covers changes to metered volumes.

Impact on the demand (exit) arrangements

- 4.86 The Working Group considered the possible interaction with the demand (exit) transmission charging arrangements. CAP162 Overrun will only apply to entry parties (generation).
- 4.87 Under the Marginal methodology, the demand side could be included. The Working Group felt that it is not clear from National Grid's initial Marginal methodology analysis whether the exclusion of the demand side has a significant impact. National Grid indicated that the overall assumption was that all demand had firm rights, thus did not require Overrun as an option. It was suggested that this was an opportunity lost.
- 4.88 National Grid indicated that linking overrun to exit reform would be extremely complicated and would delay the introduction of Overrun. One of the main objectives of raising CAP162 was to facilitate new entry in a timely manner. For this reason, the expedient introduction of improved entry arrangements, exit reform had not been included. However, reform of exit should not be excluded from future introduction by CAP162.

Overall revenue recovery (TNUoS, BSUoS and other charges)

- 4.89 The Working Group considered the effects of Overrun on overall revenue recovery. It is not clear how the TOs' income in the long term will be affected, this depends on whether a significant amount of generation decides to Overrun and avoids paying long-term transmission access costs (this will

depend on whether the Overrun tariffs give the appropriate cost signals). In the short term National Grid collected the allowed revenue through TNUoS, if parties switched over to Overrun the residual element would increase. Treatment of the residual is being discussed under changing governance. The Working Group felt consideration should be given to this in the TO price control reviews as Overrun may result in insufficient investment signals to the TOs and/or increased charges for Users that do not Overrun and pay charges for long-term transmission access.

- 4.90 If Overrun costs are not allocated effectively to parties causing them then the resultant costs (positive or negative) will be socialised in BSUoS. Potentially, non-overrunning generation and demand may be affected in respect of either higher or lower levels of BSUoS. However, the methodologies have been designed with the Overrun principles in mind and if necessary could be reviewed at a later date.
- 4.91 The Working Group agreed that National Grid should have an incentive to minimise the cost of Overrun even though it was targeted. It was suggested that as the volume and cost was included in the overall BSUoS budget, incentivisation through the BSIS scheme may be appropriate. National Grid suggested there may be some adjustments required to the BSIS scheme to take account of the unpredictability associated with Overrun, similar to market length adjustments, but in principle BSIS style incentivisation could be investigated. The Working Group recognised that this was an issue that Ofgem and National Grid would need to discuss with the Industry in any CAP162 implementation period.

Impact on Security of Supply

- 4.92 Some of the Working Group considered that Overrun would not impact on Security of Supply as generators are already, in extremis, allowed to generate above their transmission capacity holding under emergency conditions under the current arrangements. However, other Working Group members noted that such (emergency conditions) capacity was: (i) outwith of the control of the generator to utilise (National Grid had to invoke it); (ii) uncertain in terms of when it might occur; and (iii) for example with MaxGen, could be limited in volume and duration. This would not be the case with Overrun, which could, in the extreme, be utilised by a generator for 8,760 hours a year for 100% of their power station output.
- 4.93 Some working group members considered that Overrun could actually be detrimental to the Security of Supply if it led to Users relying on short-term transmission access which did not provide the necessary long-term transmission system investment signals. This could lead to inadequate transmission capacity being built in the required timescales.
- 4.94 National Grid indicated that any impact on investment of Transmission Licensees was covered by the GBSQSS, which is undergoing a parallel review.

Impact on Maintenance of the Reliability, Safety & Operation of the Grid

- 4.95 National Grid did not identify any negative impacts other than the GBSO taking more actions to compensate for Overrun, which manifests itself as a cost.

- 4.96 All overrunning parties must continue to comply with the Grid Code. Each generator will submit accurate Physical Notifications and data as per the Grid Code. The Working Group accepted this view from National Grid. It was expected that the GBSQSS review would consider this issue further.

Limiting participation to physical parties

- 4.97 The Working Group understood that to Overrun a party would have to have metering so Overrun was not relevant for non physical parties. However, the Working Group understood that a metered party could take out a hedge with a third party on Overrun prices, although most Working Group members thought this unlikely. In addition, it was not clear to some Working Group members that non physical parties could become party to the CUSC (and thus avail themselves of Overrun).

Interaction with the other proposed CUSC Amendment Proposals

- 4.98 Overrun is one of a number of potential short term and long term transmission access products available to Users assuming they are approved and implemented. Overrun is a product for Users who do not wish to obtain access to the transmission system via long-term transmission access products (such as, currently, TEC, LDTEC, STTEC or trading TEC) or, in the future if one or both of CAP161 and CAP163 is implemented short-term SO (capacity) Release or Sharing with another User. There is potentially a strong interaction between CAP162 and CAP163 (Sharing) as the ability to Overrun will prevent sharing parties from being in breach of the CUSC if they exceed their shared transmission access level.
- 4.99 Overrun will also act as a competitor to SO release and to TEC sharing and trading, allowing parties a choice of obtaining capacity above TEC in more than one way i.e. introducing some contestability in obtaining capacity above TEC.

5.0 SUMMARY OF WORKING GROUP 3 DISCUSSIONS

Generation zoning

- 5.1 National Grid recommended that in light of the proposed suite of CUSC Transmission Access Review Amendments (namely CAPs 161, 162, 163, 164, 165 and 166), it might be appropriate to move away from the existing TNUoS generation zones and develop a set of zones which better facilitate the release of transmission access via SO Short-term Entry Rights (CAP161), Entry Overrun (CAP162), Entry Capacity Sharing (CAP163), Long-term Finite Rights (CAP165) and Long-term Entry Capacity Auctions (CAP166). To help facilitate this work on zones the CUSC Amendment Panel established a separate group, known as Working Group 3, to assist Working Groups 1 and 2.
- 5.2 At the second meeting at Working Group 3 on 27th May 2008, National Grid introduced two separate generation zoning options in the form of: (i) a Scenario-based Zoning Methodology ("SZM"); and (ii) a Network-based Zoning Methodology ("NZM"). Both methodologies were proposed on the assumption that:
- local reinforcement works required to connect a generator to the MITS (and therefore make use of transmission capacity) are achievable;
 - the resulting zones facilitated TEC exchanges within zones on a 1:1 basis; and

- limits (MW) at points of connection can be ‘aggregated’ in terms of their effects on wider transmission system constraints.

Scenario-based Zoning Methodology (“SZM”)

5.3 The SZM considered the actual boundary constraints of the transmission system and followed the process of: (i) identifying candidate boundaries; (ii) identifying critical circuits for these boundaries based on the required transfer level specified within the GB SQSS; (iii) the calculation of sensitivity factors at all nodes with regard to critical circuits; and (iv) the grouping together of those nodes which have similar sensitivities.

5.4 In practice, candidate boundaries were identified manually based on the operational boundaries of the transmission network. The worst critical contingency and circuits were then identified against the indicative boundary. Sensitivity Factors were then calculated for each node by ‘injecting’ an additional 100MW of generation at each node within a zone and calculating the resultant flows on each of the relevant critical circuits under a contingency. Those nodes of Sensitivity Factors within a range of 20 percent were then grouped together.

5.5 The advantages of the SZM were observed as being that:

- maximum tradable transmission capacity within a zone could be derived from Sensitivity Factors for the winter peak scenario;
- the grouping of nodes of similar Sensitivity Factors into zones gives greater clarity and certainty to zonal transmission access; and
- additional constraint costs are minimised because actual transmission network constraints are honoured.

It was also noted that the publishing of nodal Sensitivity Factors leads to an indicative economic optimisation for TEC exchange.

5.6 The disadvantages of the SZM were noted to be that critical circuits tend to ‘move’ in meshed networks and that they are scenario and contingency dependent. Additionally, it was noted that zones developed under the SZM are unlikely to remain stable over a number of years due to changes to the transmission network and the demand and generation background.

Network-based Zoning Methodology (“NZM”)

5.7 The NZM did not consider actual transmission boundary limitations, but worked on a ‘hub and spoke’ principle, considering the change in voltage angles resulting from the exchange of TEC at individual nodes as the parameter for determining relevant zones. It was identified that under the NZM, zones might be considered to be less likely to change so long as the network topology and impedance of the transmission network did not change significantly. And, where the SZM studied a few ‘snapshots’ of the transmission system, the NZM did not rely on a specific scenario being studied, hence providing more stability to the zones in the long-term.

5.8 Limitations of the NZM were identified to be that the choice of hub-node used to determine the zones was critical to the zonal definition and likely to have a significant impact on a generators ability to exchange transmission access rights. Additionally, it was noted that actual transmission system constraints might not be fully reflected.

Working Group 3 discussion

5.9 Working Group 3 noted that a significant amount of further information and analysis of both options was required, including the estimated total effect on

transmission constraints, the stability of zones and the 'liquidity' of capacity exchange.

- 5.10 Working Group 3 questioned as to whether it would be possible to overlap zones in the NZM, or even have a unique zone for each node to maximise tradability. Concern was expressed however, regarding the impact of sequential trades from zone to zone and the potential impact of this on constraint costs.
- 5.11 In addition to the SZM and NZM, Working Group 3 questioned the possibility of the publication of node to node exchange rates in preference to zoning. The presentation slides regarding the SZM and NZM can be found on the National Grid Codes website.¹⁰

Indicative generation zones

- 5.12 At the fourth meeting of Working Group 3 on 16th June 2008, National Grid presented some indicative generation zones based on both the SZM and NZM. Zoning for regions that are radial in nature was relatively simple, the zoning process however, was much more difficult due to the presence of loop-flows.
- 5.13 It was noted that in the short to medium term (circa 2-3 years), National Grid (as the GBSO) can arrive at larger generation zones which may better facilitate the exchange of transmission access rights due to the greater certainties associated with background conditions and operational measures. In the longer-term however, it was considered that smaller generation zones would be required to cater for increased uncertainty.
- 5.14 In general, a number of key issues and findings were noted:
- Generation zones were generally different from the existing TNUoS generation charging zones.
 - Short-term zones can be much bigger than the long-term zones, and they can change from time to time.
 - In a meshed network, the effect of loop-flows may increase the percentage loadings on critical circuits and make it difficult to define zones.
 - The definition of local works will affect zoning criteria.
 - Being geographically proximate does not necessarily mean being electrically proximate, especially when substations are operated in a "split" configuration. In this instance, re-arranging of busbar sections or substation uprating may be required to facilitate TEC sharing.

Working Group 3 discussion

- 5.15 Working Group 3 noted the importance that any new zoning methodology should be suitable for all long and short-term transmission access products proposed under the suite of CAP161-166 amendments and gave consideration to the trade-off between the potential increased costs of operational constraints, the liquidity of absolute trades, and the number of nodes in each zone. It was considered that zones should be based on capability (e.g. local connection capacity) rather than obtained long-term transmission access rights (TEC or its equivalent).

Hybrid zoning methodology

¹⁰<http://www.nationalgrid.com/NR/rdonlyres/9A797D89-2BC2-459C-A3C7-744F3212109F/25954/Meeting2Zoning.pdf>

- 5.16 At the fifth meeting of Working Group 3 on 1st July 2008, National Grid presented some indicative generation zones based on a hybrid (of SZM and NZM) zoning methodology, in that a critical trip was applied (under n-d) with 100MW injected at each of the rim nodes and then extracted at the hub node. Following this, the loading of all lines under a combination of every rim-rim, rim-hub pair was analysed. If a loading increased by more than 20MW, this was then considered to be a 'sensitive' case. The exercise was repeated for a number of other critical trips with a sense check undertaken prior to determining the zones.
- 5.17 The methodology applied to determine a set of zones was as follows:
1. Set local works and size of zones (2 of the 3 variables – excluding constraints).
 2. Identify active constraints based on existing knowledge of that selected zone.
 3. Calculate the volume of additional constraints based on:
 - NZM sensitivities;
 - Load factors of buying and selling generators to calculate the volume of potential tradability.
 - Use realistic outage windows to estimate the number of hours of potential exposure to constraints.
 4. Estimate the costs of constraining off and replacement energy.

Operational constraint costs

- 5.18 In addition to presenting some indicative generation zones and some of the issues surrounding the zoning process, consideration was given to the balance between facilitating transmission access tradability within zones and the consequences of constraint costs and stability.
- 5.19 Operational constraint cost is calculated based on the volume of active constraints (MWh), multiplied by the cost (£/MWh) of these constraints. It was noted that a small generation zone will lead to less trading options, though this might not necessarily be considered as a 'low' level trading. Working Group 3 members considered that a potential % cap of total zonal trades should ideally, be the same for all generation zones, although different zones may permit a far larger volume of transmission access trade for the same operational cost risk. It was considered that limits on trades would allow larger zones with more nodes, and that a limit could be set as a function of the load factor of generators, or proportions of the total transmission access capacity (MW) within a zone.
- 5.20 National Grid presented some high level analysis on the volume of additional constraints and the associated cost of this, based on a mid depth local works definition and the exchange of between 25-100% of TEC within a zone when compared to existing constraint costs of approximately £80m per annum.

Working Group 3 discussion

- 5.21 Working Group 3 noted that there is a trade-off between (i) nodal tradability, (ii) maximum zone size and (iii) how much local works must be completed prior to transmission access being allocated. For example, if a deep definition of 'local works' is applied then, as a consequence, zones are likely to be larger. It was reiterated that the existing assumption is that when transmission access is exchanged or shared, resulting in additional constraints, this additional cost will be socialised amongst all transmission system Users.

- 5.22 Working Group 3 noted that there are three different areas in the TAR proposals where local assets and works are defined: (i) within the CUSC; (ii) for local charging purposes; and (iii) within the zoning methodology. Working Group 3 considered that the disconnect between the actual local works that are required for a connection and the local charge which the User will pay may be necessary to:
- Avoid circumstances in which there would be a permanent output restriction on a generator being connected; and
 - Protect the individual generator from the actions of others or the decisions of the Transmission Owner.
- 5.23 The Working Group noted that having separate definitions may be consistent with the way in which current Construction Agreements list the incremental works required to accommodate generators, with the generator paying the Long-Run Marginal Cost (LRMC) derived from the Investment Cost Related Pricing (ICRP) transport and tariff model. However, the Working Group subsequently agreed that different CUSC and charging definitions may lead to users getting access rights without facing the associated cost reflective charge, as described in 35.84 below.
- 5.24 Working Group 3 considered that the stability of zones was very important and therefore new generation zones should not be developed in this process on the premise that zones are acceptable at present, but there may be issues to address in the future. The presentation slides relating to the hybrid zoning methodology can be found on the National Grid Codes website.¹¹
- 5.25 At the sixth meeting of Working Group 3 on 16th July 2008, National Grid presented some indicative generation zones, using a 'mid depth' definition of local works and a lower Sensitivity Factor limit (20%). In order to avoid significant local works reinforcement conditions, very small zones were created which based on previous Working Group 3 discussions, were considered too small. However, it was noted that to fully appreciate the 'size' of zones, it is the number of trading parties and the amount of tradable transmission access capacity within a zone that should be considered more relevant than the geographic area.
- 5.26 In parallel, National Grid presented some further analysis on indicative generation zones based on a 'deeper' definition of local works, to assess how this may increase the tradability of transmission access. Several Indicative zones were created although it was noted that it was not possible to zone certain regions such as East Anglia on the basis of the deep definition, without invoking local works designs that were economically inefficient. In general, it was considered by the Working Group that moving to a deeper definition of local works did little to increase the size of zones and the potential liquidity of access sharing.
- 5.27 Working Group 3 noted that stability at nodes is important, but the possibility of considering (i) nodes with existing generation and (ii) nodes with signed applications (to connect to the transmission system at some date in the future) should be explored. This was not necessarily perceived to provide stability to zones beyond a 3 to 5 year period, but it was deemed workable if a fully automated and transparent model can be made publicly available to the industry.

¹¹ http://www.nationalgrid.com/NR/rdonlyres/1E709B88-B313-47B7-9835-2424C283798C/26845/GenerationZoning_final_meeting5.pdf

Generation zoning and nodal exchange rates

- 5.28 At the seventh meeting of Working Group 3 on 29th July 2008, National Grid recapped on the generation zones which had been presented to date, noting that these were based very much on existing generation centres, existing demand centres and radial spurs.
- 5.29 When identifying the generation zones, a number of factors had been raised as requiring consideration, particularly as to whether generation zones should be developed with a view to them being short-term or long-term, and whether they should be based on physical transmission system boundary limits or the additional constraint costs that these would be likely to produce. Given the complexity of zoning, attention of Working Group 3 turned to giving consideration of inter-zonal TEC exchange of transmission access and even the possibility of nodal TEC exchange of transmission access.
- 5.30 The options considered included the determination of a nodal 1:1 exchange rate based on the physical transmission network rather than generation background, which should therefore be temporally stable. This option would need to consider both long-term and short-term timescales, local charging definition and reflect network contingency analysis.
- 5.31 The second option was for a Locational Marginal Pricing (“LMP”) based approach for setting point-to-point rights. This bid-based approach can accommodate multiple constraints and payments would be made into a ‘pool’ based on the cost as compared to a hub point. Working Group 3 had concerns that the results would be volatile and that there would be less transparency behind the prices. In addition, the approach was felt to be complex.
- 5.32 Alternatively, a ‘flowgate’ approach was considered which would look at the physical capacity of constraining transmission circuits. This was felt to be a substantial change to existing transmission access rights, and with the example of around 1.5 billion nodal calculations per year required to update the Flowgate rights, Working Group 3 felt that this option was the most complex to implementation and was prone to volatility.
- 5.33 The last option considered was the use of a nodal exchange rate using a MWkm methodology. Consideration was given to using the Direct Current Load Flow (“DCLF”) transport model currently used to calculate TNUoS tariffs, to calculate nodal exchange rates for transmission access. This option involved taking into account various sets of contingencies, with the added advantage that some automation to identify all circuits was already available in the form of the Secured Load Flow model used to calculate to Global Locational Security Factor in TNUoS tariffs.
- 5.34 The weaknesses of this option were noted as being that the use of MWkm as a measure, does not equate to a critical circuit flow and as a result, overestimated transmission access exchange rates had already been identified at this early stage and would continue to be a significant risk. In addition, it was noted that there was no correlation to overloaded flow and the increase in GBSO costs that would be associated with this.
- 5.35 At the eighth meeting of Working Group 3 on 13th August 2008, as well as further developing the principle of a zonal methodology based on nodal exchange rates, National Grid introduced a zonal alternative and a nodal alternative.

- 5.36 **Nodal exchange rates:** A step by step methodology was discussed for establishing zones through grouping nodes between which the exchange rate fell within a certain range. Example exchange rates were shown for a particular approach based on specific assumptions. The approach was based upon worst-case contingencies in order to establish exchange rates, where the resultant zones would have minimal constraint costs arising from the exchanges. Transmission access exchange rates were shown for one set of possible assumptions. Working Group 3 was comfortable with the exchange rate discussed, which reflected the different impacts on a specific circuit from different nodes, but expressed concerns that under various critical trips the exchange rate may change significantly.
- 5.37 **Zonal alternative:** An alternative is to use zones that have already been defined (e.g. SYS, charging or candidate short/medium term generation zones), then the impact of such (i.e. increase in constraint costs) could be examined for an agreed suite of assumptions and scenarios. The working group agreed that careful assumption must be made around likely projects connecting and TEC sharing behaviour.
- 5.38 **Nodal alternative:** Working Group 3 considered an ex ante nodal exchange rate approach. The total impact on constraint costs is mitigated when Users who wish to share, notify the SO of the specific nodes between which the transmission access will be shared in addition to the maximum size of trade. This allows a more robust exchange rate to be established. Once granted sharing could occur over any timescale; without exposure to nodal overrun charges.

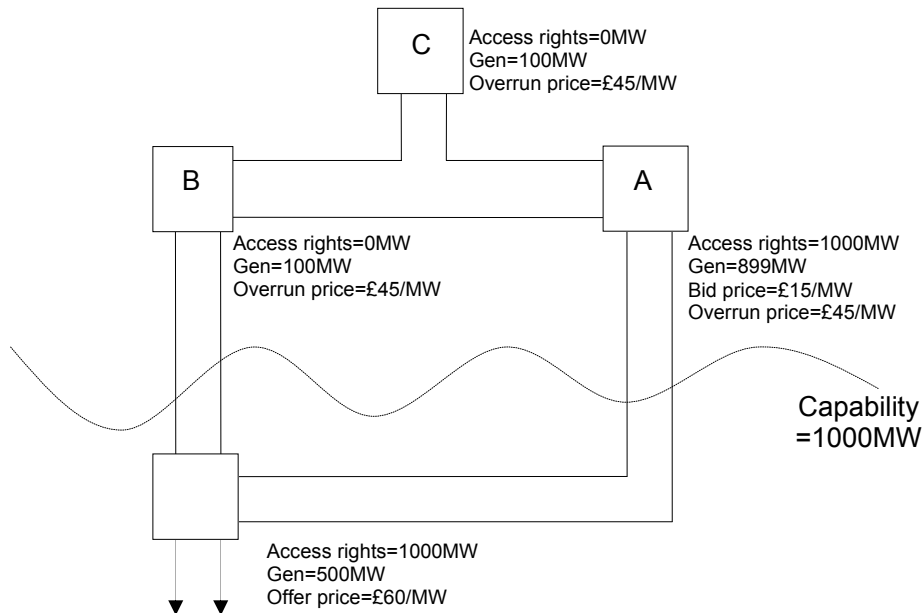
Sharing access rights between nodes

- 5.39 Given the issues identified with establishing zones in which sharing with a 1:1 exchange rate is allowed, at the ninth meeting of Working Group 3 on 22nd August 2008, the Working Group gave some further consideration to some potential options for sharing transmission access between nodes, without the requirement for generation zones. Three models were considered (the presentation is available on the National Grid Codes website):
- (a) Sharing with exchange rate determined by ratio of nodal (ex post) Overrun prices;
 - (b) Sharing with fixed point to point exchange rate calculated by National Grid based on known volume and duration; and
 - (c) Sharing facilitated by the release of point to point transmission access rights by National Grid in investment timescales.

Exchange rate determined by ratio of nodal Overrun prices

- 5.40 Under this option, the User would notify National Grid of a sharing arrangement agreed bilaterally between two parties. National Grid would then calculate exchange rates based on (ex post) overrun prices. The results from these calculations would then form the inputs into the calculation of overrun volume.
- 5.41 Whilst overrun prices allow Users to share transmission access rights to an extent, Working Group 3 considered that there was an issue with a bilateral exchange being affected by a third party generating, which would consequently affect the overrun prices and exchange rates
- 5.42 If we consider the simplified example (shown in the diagram below) of two generators behind a constraint, generator A has long-term transmission access rights and generator B does not. The overrun price increases above

zero only if the aggregate output from both generators exceeds the long-term rights held by generator A. This means that provided generator A reduces output whenever generator B wants to generate, the overrun price faced by generator B will be zero.



- 5.43 This arrangement would break-down if there was a third generator, generator C, generating without transmission access rights behind the same constraint. The output from generator C could also cause the overrun price to increase above zero, undermining the effectiveness of the sharing arrangement between generator A and generator B.
- 5.44 In these circumstances, generator A is not able to extract the full value of their transmission access rights due to the actions of a third party. This would be solved if generator A and generator B were to enter a sharing arrangement with the associated transmission access exchange rate based on the ratio of the (ex post) nodal overrun prices. Now, if generator C decides to generate, this would push the overrun price at the generator A node and the generator B node such that the exchange rate remains constant.
- 5.45 In more complex examples, the actions of generator C may cause the exchange rate between generator A and generator B to diminish, as there would be a constraint between generator A and generator B, but the value of generator A's transmission access rights at generator B's node would always be accurately reflected.
- 5.46 Working Group 3 considered the following high-level process for exchange rates determined by the ratio of overrun prices, noting that this option for sharing transmission access rights was reliant on the approval of the CUSC amendment (CAP162) to introduce overrun prices calculated in a cost reflective manner. The Working Group subsequently agreed that this option was only applicable with overrun with a marginal price, as described in the Final Conclusions from Working Group 3 below.
- (a) Users notify National Grid of sharing arrangement

- i. It has been assumed that a joint request for a sharing arrangement would be made by a User with transmission access rights (seeking to donate) and a User without transmission access rights (seeking to receive).
 - ii. The request would state a 'go-live' date and 'end-date' for the arrangement, along with a maximum capacity in MW. The maximum capacity is included to allow a User to donate to a number of receiving Users.
 - iii. The request would need to be made [x] days ahead of time to allow for the necessary administrative process to be undertaken.
 - iv. The Sharing arrangement and associated 'go-live' date and 'end-date' would need to be recorded in a central register.
- (b) National Grid calculates transmission access exchange rates based on ratio of (ex post) overrun prices
- i. For a donation of transmission access rights from node A to node B, the exchange rate would be calculated as:

$$\text{Exchange rate} = \frac{\text{Overrun price}_{\text{Node A}}}{\text{Overrun price}_{\text{Node B}}}$$

Therefore, if the power station at node A reduces output to 100MW below its total transmission access rights holding, and the overrun prices are £45/MWh at node A and £50/MWh at node B, this would provide for the following at node B:

$$100\text{MW} \times \left[\frac{\text{£}45/\text{MWh}}{\text{£}50/\text{MWh}} \right] = 90\text{MW}$$

- ii. This calculation would be performed for each half-hour for which the sharing arrangement is valid (i.e. between 'go-live' date and 'end date'.
- (c) Results from calculations in (b) form inputs to calculation of overrun volume
- i. It should be noted that this calculation is reliant upon overrun prices being calculated prior to the final volumes of overrun being known. (This cannot be done for the Cost Recovery methodology)
 - ii. The volumes of overrun at each node would need to be corrected for these exchange rates. If, in the example above, a generator at node B without access rights generated 100MW, this would initially be considered as 100MW of overrun, but the exchange rate would then be calculated which would essentially show a 100MW donation from node A providing 90MW of transmission access rights at node B and the overrun volume would be corrected from 100MW to (100MW-90MW=) 10MW.

Fixed point to point exchange rate calculated by National Grid

- 5.47 Whilst option 1 (exchange rate determined by ratio of nodal overrun prices) may be acceptable for Users that are reasonably (electrically) proximate, this is unlikely to be the case for generators that are further apart, due to the increased risk of a binding constraint that effects the receiving (but not the donating) generator. In order to facilitate sharing for these power stations, National Grid could calculate a fixed transmission access exchange rate that could be applied.

- 5.48 The work to investigate 1:1 sharing within pre-defined zones has identified significant risks due to actual node to node exchange rates being dependent upon:
- (a) The volume of transmission access rights shared: A node to node exchange rate calculated based on a transfer of 1MW may be incorrect for a transfer of 10MW, 100MW or 1GW.
 - (b) Other transmission access right sharing: The exchange rate between nodes A and B may be incorrect if there is a transfer between nodes C and D.
 - (c) Other time dependent transmission system conditions: On the day transmission system conditions, such as demand and circuit outage conditions, also impact on node to node exchange rates.
- 5.49 In order to ensure that reasonable node to node exchange rates can be calculated, the User would need to minimise uncertainty by specifying the maximum volume of transmission access rights to be Shared and the timing and the duration of the sharing arrangement.
- 5.50 Working Group 3 considered the following high-level process for fixed point to point transmission access exchange rates calculated by National Grid.
- (a) Users apply to National Grid for a fixed exchange rate
 - i. It has been assumed that a joint request for a sharing arrangement would be made by a User with transmission access rights (seeking to donate) and a User without access rights (seeking to receive).
 - ii. The Users would be liable to pay a fee to cover the cost of the analysis performed by National Grid.
 - iii. The request would state a 'go-live date' and 'end-date' for the arrangement, along with a maximum capacity in MW. As described above, the fixed duration and maximum volume information is required to cap the risk associated with the sharing arrangement, allowing the SO to calculate a reasonable fixed exchange rate.
 - (b) National Grid calculates fixed point to point exchange rate
 - i. The request would need to be made a number of weeks ahead of time to allow for an engineering assessment to be undertaken by National Grid (the number of weeks of analysis would depend on the duration of the exchange rate, as described in **Error! Reference source not found.** above).
 - ii. For applications for exchange rates within the current operational year, the assessment would be based on the current transmission system and would be performed against the requirements of the operational criteria contained in the SQSS. This assessment would reflect the information that is available in these timescales, including demand level and planned transmission system outages.
 - iii. For applications for exchange rates that go beyond the current operational year, the assessment would be against the current and committed transmission system (including planned reinforcements) and would be performed against the requirements of the planning criteria contained in the SQSS.
 - iv. [Subsequently agreed that this assessment should not increase socialised constraint costs or sterilise boundary capability]
 - (c) National Grid offers fixed exchange rate and user has 2 weeks to accept. If accepted, the Sharing arrangement and associated 'go-live date' and 'end-date' would need to be recorded in a central register and used in overrun volume calculations and future 'applications' for capacity/exchange rates. The appropriate charge for this was considered to be a cost-reflective fee based on the administration costs.

Point to point access rights released by National Grid

- 5.51 In the event that a fixed transmission access exchange rate provided by the aforementioned option above was considered to be unacceptably low, Users may want the Transmission Owners to invest in order to achieve a point-to-point capability. Such investment could be minor (and therefore relatively quick) when compared to the investment required to provide that same User with full entry rights.
- 5.52 In this option, a User would apply to National Grid for a transmission access right between [Node A] and [Node B] for a maximum of [x] MW and a duration of [Y] years. National Grid would then assess that application against the current planning baseline with an additional [X] MW of generation at Node A and an additional [X] MW of demand at Node B.
- 5.53 National Grid would then offer a point-to-point transmission access right to the User, with the offer including a list of reinforcement works triggered by that application. In the event that the User then accepts this offer, a point-to-point right is only available when reinforcements have been completed. The point-to-point right is recorded and used in overrun volume calculations and future 'applications' for capacity / exchange rates / point to point rights. It was considered appropriate that a User should pay the TNUoS differential between Node A and Node B for [Y] years.

Cost of Constraint Analysis on the Short/medium Generation Zones

- 5.54 The expected impact from implementation of the proposed short/medium term generation zones was presented during the tenth meeting of Working Group 3 on 12th September. An examination was made of the potential additional costs of constraints incurred as a result of transmission access sharing within zones. National Grid noted that where generators are permitted to connect to the transmission system without the requirement to undertake wider system reinforcement, this is likely to result in additional system boundary constraints and increase the constraint volumes on the existing constraint boundaries.
- 5.55 Working Group 3 considered that further thought regarding the range of assumptions was required in the pursuit of calculating the utilisation element of constraint cost. Problems with trying to make predictions about future constraint cost trends from using historic SO costs were identified. It was noted that in a zone which flips between importing and exporting, it is not appropriate to attribute a cost to the boundary constraint under a winter peak scenario as it might not always be obvious if costs are related to an export or an import. In these cases, the data used needs to be further analysed to properly attribute an export or import cost against the corresponding linear trending in export or import utilisation.
- 5.56 The locational element of constraint cost was also analysed. One to one trading was considered to be acceptable up to a point of 'headroom', beyond which a specific point to point arrangement would be required. It was noted that any trade undertaken will change the size and validity of the headroom. It was considered that this headroom figure could be fixed for a year, with some risk of an increase in constraints prior to re-calculation in the following year.

Initial Working Group 3 Conclusions

- 5.57 Prior to the eleventh meeting of Working Group 3 held on 24th September, National Grid circulated a report¹² that examined the potential additional costs of constraints that would be incurred by the sharing of transmission access within generation zones. The additional utilisation and location costs are calculated using a set of proposed generation zones. The calculations presented have considered factors including headroom, sensitivity factors and loading curves from the generators. The results indicated a total (utilisation + location elements) additional cost of constraints of about £37m per annum if trading up to the headroom level only is allowed. If trading beyond the headroom was undertaken up to 2 times the headroom, the cost of constraints could potentially rise to £1.1 billion per annum for the upper range and a potential saving of about £0.2 billion per annum for the lower range. The £0.2 billion saving is the total cost of constraint from the utilisation element plus the average historical cost of constraint that can be saved. The actual cost would vary depending on the system running arrangement, the characteristics of the generators and the duration of transmission access exchange.
- 5.58 During this eleventh meeting, a summary of the options considered was made. A zoning methodology that results in small zones, with a minimal increase in constraint costs, severely limits the liquidity of tradable capacity. The Working Group recognised that methodologies that form large trading zones provide greater tradability, although the increased operational constraint costs which could result from such zones was considered too great a risk. The remaining options are (i) Larger zones, with trading limited to headroom on a point to point and beyond basis, with an allocation process for headroom and subsequent re-allocation process following the completion of a trade, was considered as a viable option by the Working Group. The downside however, was identified as being the complexity of the arrangements which would be required, the potential for hoarding capacity and that trades would be limited to within-zone; or (ii) A nodal point to point option for the sharing of system access which the Working Group also concluded was a viable option.

Final Conclusions from Working Group 3

- 5.59 The final Working Group 3 meeting was held on the 10th November, during which the key issues and areas for further confirmation from the consultation phase were discussed. One Working Group Consultation response stated that zones will lead to increased shared constraint costs but conversely, an overly pessimistic methodology may lead to under utilisation of capacity sharing. The Working Group concurred that the analysis previously presented showed that a zonal methodology with large zones has a significant risk of increasing total socialised constraint costs. National Grid discussed how, when determining nodal exchange rates, all feasible worst case system operation scenarios must be considered, in order to meet the principle of maintaining cost levels.
- 5.60 A respondent stated that a node to node exchange rate that was significantly different from 1:1 would reduce the effectiveness of sharing. Working Group 3 concurred and reiterated that this is likely to lead to sharing to occur mainly between proximate generators and it was concluded that the exchange rate should be capped at a maximum of 1 to 1 in order to prevent the ability for a User with multiple generators to book capacity and share it in order to

¹² <http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/workingstandinggroups/wg161-166/>

minimise transmission charges. A view was expressed in a consultation response that capacity entry sharing should be available in both long term and short term timescales to which the Working Group agreed, although it was recognised that exchange rates may differ between the two as certainty increases towards real time.

- 5.61 A respondent stated that a nodal exchange rate methodology must be robust and transparent, but it is felt that this may introduce unnecessary complexity and therefore cost. Whilst the Working Group agreed nodal point to point exchange rates requires a degree of complexity, ultimately it avoids the requirement to achieve a balance between limiting zonal tradability with an onerous headroom limit and introducing unacceptable risks through significant increases in socialised constraint costs. Working Group 3 therefore concluded that a node to node exchange rate methodology should be applied.
- 5.62 A respondent questioned how exchange rates based on zonal overrun prices would be calculated. The Working Group discussed the options for overrun pricing set-out in Charging Pre-consultation GB ECM-14 (Consequential impact of CUSC amendment proposals: CAP161, CAP162, CAP163 and CAP164). The options are:
- (i) Simple Methodology;
 - (ii) Cost Recovery Methodology; and
 - (iii) Marginal Methodology.
- 5.63 The simple methodology is based on historic constraint data, which is mapped to 24 indicative constraint zones. This means that all the nodes in a particular zone would be subject to the same overrun price. The Working Group noted that implementing node to node exchange rates based on these overrun prices would essentially allow unfettered sharing with a 1:1 exchange rate within these zones.
- 5.64 The Working Group agreed that whilst these zones may give the appropriate level of accuracy for a simple pricing methodology (where the impact is limited by the Local Capacity Nomination), the analysis performed previously would suggest that allowing sharing on this basis would cause an unacceptable increase in socialised constraint costs. For this reason, the Working Group agreed that node to node sharing with exchange rates based on the ratio of ex post overrun prices should not be an option with the simple overrun pricing methodology.
- 5.65 Where the cost recovery methodology is based on a “degut” of the actual costs performed ex post by the System Operator, a methodology is used to attribute actual costs to the volume of overrun to calculate a £/MWh overrun price. Whilst, unlike the simple methodology, this cost allocation will be nodal, the Working Group agreed that this methodology would be inconsistent with node to node sharing based on the ratio of overrun prices. This conclusion is based on concerns about the interaction between the derivation of the price and volume of overrun (i.e. it would not be possible to calculate the overrun price until the overrun volume is known, and with sharing the volume is not known until the ratio of overrun prices is determined).
- 5.66 The marginal methodology is based on a model of the transmission system which is optimised to minimise system balancing costs. The optimisation generates nodal marginal overrun prices (shadow costs). The Working Group noted that this pricing option was at an early stage of development,

but agreed that provided it was developed such that truly nodal (rather than boundary based) prices were produced, then it would be appropriate for use with node to node sharing with the exchange rate determined by the ratio of nodal overrun prices.

- 5.67 In summary, the Working Group agreed that node to node sharing with an exchange rate based on the (ex post) overrun prices should only be implemented if the marginal overrun pricing option is implemented.
- 5.68 One respondent specifically sought clarification for how codification could be implemented when three or more parties are involved in the transfer if the exchange rate is not 1:1. If different exchange rates are set for each exchange (there could potentially be 6 exchange rates for 3 parties) the codified approach would need to allocate TEC between parties such that monitoring can take place. The Working Group agreed that in cases where three or more parties are involved in the share, complex arrangements would be required to ensure an efficient outcome. Furthermore, the Working Group agreed that the number of parties involved in a share should be limited to two at this stage, but that this limitation should be reviewed when there is some experience of the sharing arrangements.
- 5.69 Several respondents to the Working Group Consultation requested clarification of how node to node access capacity exchange rates would be calculated. The Working Group agreed that further illustration would provide additional clarity.
- 5.70 The Working Group agreed that the basis of the exchange rate should be to “leave the system whole” such that any spare boundary capability is not used up and there are therefore no concerns about node to node sharing arrangements sterilising boundary capability.

Offshore generation

- 5.71 Working Group 3 gave consideration to offshore generation and how this would be incorporated into zones. It was noted that offshore generation is currently being modelled at the landing point, assuming a radial connection and Grid Code compliance at the point of connection.

Governance

- 5.72 Two approaches towards the governance of a new zoning methodology were considered by Working Group 3:
1. A new Licence Condition could be written into the Transmission Licence similar to that which exists for the Use of System Charging Methodology (Standard Licence Condition C5) and the Connection Charging Methodology (Standard Licence Condition C6).
 2. The governance arrangements for the new methodology could sit in the CUSC.
- 5.73 The Working Group considered that the CUSC defines the transmission access product and since zoning is part of the definition of the product, then it would be appropriate to include this as an Annex to the CUSC. Whilst this was the preferred option, the option of a Licence Condition was not ruled out.

Local Only Connections

- 5.74 The arrangements for local connections were developed by Working Group 3, and the conclusions are described below.

Definition of Local Capacity Nomination

- 5.75 Working Group 3 proposed that for generators with local only connections, a local access product should be developed. This concept, the Local Capacity Nomination (LCN) would be the maximum capacity (in MW) to which a generator is entitled to obtain transmission access products (long-term and short-term access products and overrun) within a charging year. It was also identified that it must not exceed the Connection Entry Capacity (CEC) of that generator to avoid damage to local transmission assets.

Summary of the properties of Local Capacity Nomination

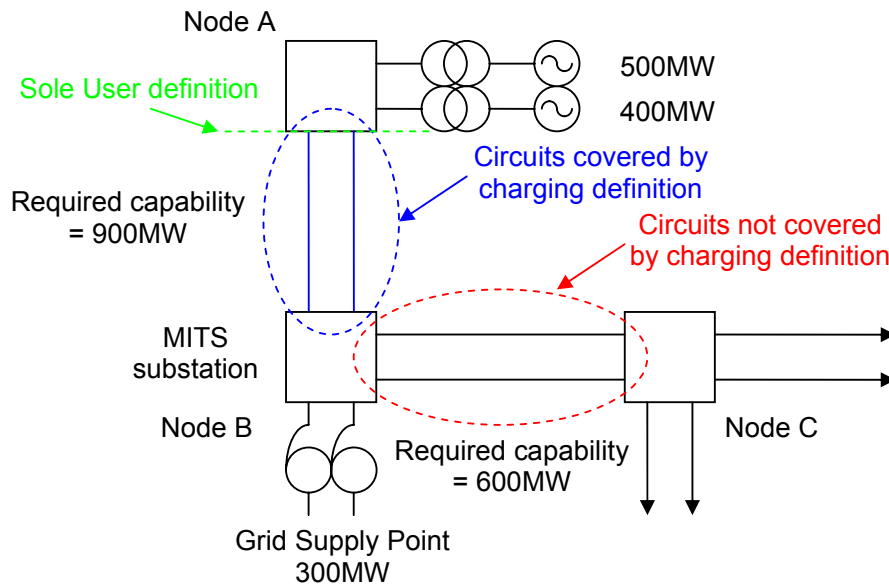
- 5.76 LCN was determined by Working Group 3 to have the following properties:
- LCN is the term used by a generator to notify National Grid of its desired maximum local capacity holding in a transmission charging year;
 - LCN represents the physical (and contractual) cap on the total generators' transmission access (MW) derived from a combination of all long and short-term transmission access products, including overrun;
 - LCN will not exceed a generator's CEC;
 - LCN is defined on a Power Station basis (consistent with TEC);
 - LCN will be allocated on a first-come-first-served basis;
 - LCN will be the basis upon which a generators' local asset charge will be calculated and levied;
 - LCN is shareable between generators, when multiple generators agree to share. Any sharing arrangement would be managed with a clause which, in the case of two generators sharing, would restrict one generator if the other generator is using the local connection capacity and vice versa. This approach is similar to that currently adopted to deal with design variation connections.

Enduring arrangements for existing LCN holders

- 5.77 Working Group 3 debated as to whether LCN should be a finite right, linked (or not) to the period of firm transmission capacity obtained in an auction, or evergreen. Given that a generator may not wish to obtain long-term capacity through an auction process, it did not seem appropriate to link LCN to capacity obtained through the auction.
- 5.78 Working Group 3 considered that evergreen rights would be appropriate provided the definition of local assets is generally limited to "sole use" assets; i.e. local assets are not shareable. Where local assets (which are not shared) come to the end of their life, the TO could determine whether they should be replaced following bilateral discussions with the relevant generator. It was noted that the proposed charging definition of local works included shared use assets in some circumstances and some Working Group members believed that it might be appropriate to change the definition of local assets in these circumstances in order to ensure that they are not shared.
- 5.79 The problem with the "sole use" approach to local assets is that it may not in all circumstances be consistent with the principle of ensuring that Users which purchase short-term access products or share, make an appropriate contribution to the cost of the assets that are provided to facilitate their connection. If a "sole use" definition of local assets were to be adopted, then the cost of "spur" circuits to entry points with multiple generators will not be based on LCN (in MW). In the extreme circumstance of a generator choosing a "local only" connection at an entry point at which other generators are connected, that generator would not make any contribution to the cost of the transmission assets required to provide their connection.

- 5.80 This is shown in the below diagram. If a “sole User” definition were to be applied (this is represented by the dotted green line), neither generator would make any contribution to the cost of the spur (shown by the blue lines) required solely to provide their connection.

Potential Definitions of Local Works



- 5.81 The Working Group therefore concluded that local assets should not be limited to “sole use” assets. The Working Group considered that an alternative approach would be to use the definition from the “local generation charging” proposals contained in National Grid’s GB ECM-11 Conclusions Report, which is that local circuits are those between an entry point and the next Main Interconnected Transmission System (MITS) substations, where a MITS substation is defined as a Grid Supply Point with more than one circuit connected or a substation with more than four transmission circuits connected. In the diagram above, these local circuits are highlighted in blue.
- 5.82 In this simplified example, the circuits between node A and the next MITS substation (node B) would be defined as “local” under the charging definition. This means that the generators at node A would get access once these circuits had been reinforced to provide a secure capability of 900MW. However, the circuits between node B and node C would not be covered by the charging definition of “local”. This would lead to a permanent restriction to the output of the generators unless these circuits were reinforced to provide a secure capability of at least 600MW.
- 5.83 As described in 5.22 above, the Working Group originally considered that different charging and CUSC definitions of “local” works may be required to:
- Avoid circumstances in which there would be a permanent output restriction on generators being connected; and
 - Protect individual generators from the actions of others or the decisions of the Transmission Owners.

- 5.84 On 10th November, Working Group 3 reviewed the consultation responses, allowing further discussion to be undertaken. The Working Group expressed concerns associated with different charging and CUSC definitions of “local” works. The Working Group noted that if the CUSC definition leads to reinforcement works that go beyond the next MITS substation in order to avoid permanent restrictions, then a user with LCN only will essentially be getting transmission access without paying the associated cost reflective charge.
- 5.85 Based on this concern, the Working Group agreed that the charging definition for local works should be consistent with the CUSC definition. The Working Group noted that there were scenarios where this definition could lead to a permanent output restriction being placed on a generator and that this would be reflected in bids for short-term access being turned down, restricted sharing exchange rates and high overrun prices. The Working Group also noted that the proposals for node-to-node sharing arrangements would allow generators in this position to apply for node-to-node access rights to facilitate sharing with other generators.
- 5.86 One Working Group Consultation respondent expressed concern that the initial view was to define LCN as a finite right, stating that generally local assets should not be shareable with other generators and that finite right arrangements are only required to redistribute assets that are no longer required by a User but can be used by other generators. During the final Working Group 3 meeting, the majority of Working Group 3 agreed that an enduring right approach was appropriate for sole user assets. National Grid completed some further analysis of the existing system and concluded that, given the relatively shallow nature of local works as defined, there were very few instances in which an enduring LCN right could risk causing inefficient investment of delays to the entry of new power stations.
- 5.87 It was acknowledged that since it is a feasible circumstance that multiple Users may wish to share LCN and the associated local assets, arrangements would be required to facilitate this. Working Group 3 agreed that this could be dealt with by including access restrictions in the generators connection agreement. This is similar to the treatment currently used to deal with connection design variations. The Transmission Owner would build sufficient local assets to cope with the shared holding of LCN only.

Application processes

- 5.88 **New connections:** Existing applications for new generation connections are progressed in line with Section 2.13 of the CUSC: *New Connection Sites, based on the desired CEC and TEC of the applicant*. Following any implementation of one or more of the suite of CUSC Transmission Access Review Amendments (CAPs 161-166), it is foreseeable that a generator may wish to obtain only short-term access products following connection. Given that a generator's LCN will determine the level of obtainable short-term (and long-term) transmission access, and provide the basis upon which the TO decides on an economic level of transmission investment, the concept of LCN needs to be introduced into CUSC Exhibit B: *Connection Application*. A connection application will then be progressed under the same process as any other connection application.
- 5.89 **Existing connections wishing to increase LCN:** Section 6.30.2 of the CUSC: *Increase in Transmission Entry Capacity* defines the process by which generators can currently apply to increase their TEC. Any request from a User to increase its TEC for a connection site up to a maximum of its

CEC is deemed to be a modification. This approach also appears appropriate for Users wishing to apply for an increase in LCN. In the event that multiple generators were sharing LCN, the application would have to be made on behalf of all of the generators involved.

- 5.90 **Application fees:** Given the proposed changes to the transmission access regime, it is considered appropriate that the current application fees included in the Statement of Use of System Charges, should be reviewed to differentiate between connection, local, and wider transmission system applications. Fixed and variable application fees will remain in operation. The Working Group noted in particular that generators wishing to increase LCN above their current TEC level during transition should not be exposed to the full Modification Application fee currently associated with changes in TEC.
- 5.91 **Pre-commissioning user commitment:** Working Group 3 identified that there are a number of potential options for arrangements to provide pre-commissioning user commitment:
- Cost-reflective final sums liabilities (possibly capped at the original offer);
 - A liability based on the relevant Unit Cost Allowance (UCA); or
 - A liability based on a multiple of the local generation TNUoS tariff.
- 5.92 Working Group 3 concluded that the requirement for pre-commissioning security associated with increases in LCN should be consistent with the arrangements proposed for wider long-term transmission access under CAP165.
- 5.93 The CAP165 original proposal for wider rights is a liability that ramps up over the 4 years prior to completion, to a total of 8 times the wider generation TNUoS tariff. This is reflected in the minimum booking of wider access rights to apply post-commissioning. The 8 years is derived from analysis of TNUoS tariffs against wider UCAs, which shows that, on average, the UCAs are 15 times the TNUoS tariffs. The 15 is halved to reflect a 50/50 risk sharing between generators and consumers. Consistency would imply that the same multiplier could also be used for local connections.
- 5.94 However, there is an additional rationale for 8 years being an appropriate multiplier: If local TNUoS was exactly reflective of capital costs, then a capital payment of 8 x annuitised TNUoS would cover 50% of the capital costs. This is because the TNUoS methodology converts capital sums by assuming a 50 year asset life and a 6.25% rate of return. Annual sums can be converted into a capital sum by multiplying by:
- $$(1-(1+0.0625)^{-50})/0.0625 = 15.22$$
- 5.95 If the 50% risk sharing, consistent with the CAP165 treatment for wider access is applied, the result is a multiplier of 8.
- 5.96 Local TNUoS would not recover all costs, due to Users paying for what they are using rather than what is installed. It therefore would seem appropriate that security is also provided on this basis, and that security should not be provided for TO investments made for wider system reasons.
- 5.97 The Working Group therefore concluded that, consistent with the CAP165 original treatment for wider access, pre-commissioning User commitment for local commitment should be based on a multiple of 8 years of local generation of TNUoS, profiled 25%/50%/75%/100% over the 4 years prior to completion.

- 5.98 Termination or reduction of the requested LCN would therefore result in the levying of a Local Capacity Reduction Charge, based on Local Cancellation Amounts. The Local Capacity Reduction Charge would be non-refundable.
- 5.99 The Local Cancellation Amount in each year would be a percentage of the Local Termination Amount, which is the higher of zero and eight times the relevant local generation TNUoS charge. The Local Capacity Reduction Charge would therefore be calculated as:

$$\text{Local Capacity Reduction Charge} = \text{LCN}_r \times \text{LCAM}_t$$

Where:

- LCN_r is the reduction in Local Capacity Nomination in kW.
- LCAM_t is the relevant Local Cancellation Amount which varies according to the number of full years from the Completion Date:
 - In the year prior to the Completion Date (i.e. t) $\text{LCAM} = \text{LTA} \times 100\%$, where LTA is the Local Termination Amount;
 - Where $t=-1$, $\text{LCAM} = \text{LTA} \times 75\%$;
 - Where $t=-2$, $\text{LCAM} = \text{LTA} \times 50\%$; and
 - Where $t=-3$, $\text{LCAM} = \text{LTA} \times 25\%$.

$$\text{Local Termination Amount} = \text{Max}(0, (\text{LocGenTNUoS}_n \times X))$$

Where:

- LocGenTNUoS_n is the relevant nodal Local Generation TNUoS tariff applicable to the generation project and published in the Statement of use of System Charges. If such a nodal tariff is not currently published, then the appropriate tariff will be calculated by National Grid as part of the application process, in accordance with the Charging Methodology.
 - X is a multiplier, initially taking the value 8, although it may be appropriate that this be amended in subsequent price control periods.
- 5.100 Local Cancellation Amounts will be calculated using the prevailing local Generation TNUoS tariff at the time of Capacity Reduction. Capacity Reduction Charges would not apply to projects where there are no transmission asset works.
- 5.101 **Pre-commissioning security:** The introduction of generic Local Capacity Reduction Charges, defined in the CUSC to replace the existing final sums regime, defined in the bilateral Construction Agreements, will also require the introduction of provisions to define the level of financial security that should be held in relation to these potential liabilities.
- 5.102 It is therefore to add the applicable Local Cancellation Amount to each User's Security Requirement, as defined in paragraph 3.22 of the CUSC. To the extent that these amounts exceed the Allowed Credit extended to each User, Security Cover will need to be provided to National Grid, in any of the forms prescribed in the CUSC.
- 5.103 Working Group 3 noted that alternatives to the CAP165 original amendment proposal had also been developed by Working Group 2, including cost reflective final sums liabilities. The Working Group noted that should these CAP165 alternative amendments be approved, then they would also amend

the pre-commissioning liabilities and security associated with LCN to be cost reflective final sums liabilities,

- 5.104 **Existing connections wishing to decrease LCN:** Section 6.30.1 of the CUSC: *Decrease in Transmission Entry Capacity* defines the process by which generators can currently reduce their TEC. Essentially, a User is entitled to decrease its TEC giving five business days notice in writing, prior to the 30 March in a financial year, with that notified decrease in TEC taking effect on 1 April of that same year. When discussing the possibility that LCN could be evergreen, the Working Group considered that this process could be applied to LCN. (The Working Group also noted the discrepancy between the late March deadline and National Grid's requirement for charge setting data to be provided no later than 23rd December in the previous (charging) year. Had the Working Group decided to pursue an evergreen approach, it would have recommended an alignment of the notification timescales associated with TEC / LCN reduction with the TNUoS charge-setting process.
- 5.105 However, given that the Working Group concluded that LCN should be a finite right, it would not be necessary to adapt the existing process for decreasing TEC for LCN. Instead, having applied for and obtained an LCN for a finite period, a User would be committed for this period, with an obligation to pay a Local Capacity Reduction Charge in the event of termination or reduction of LCN.

Transitional arrangements to LCN

- 5.106 Working Group 3 considered three options for transition from the current arrangements to those which require a Local Capacity Nomination.
- LCN based on a generator's CEC
Given that CEC is not currently linked to transmission access allocation, this option seems the least appropriate.
 - LCN based on a generator's TEC
Given that the suite of CUSC Transmission Access Review Amendments (namely CAPs 161, 162, 163, 164, 165 and 166) are potentially introducing some fundamental changes to the way in which transmission access is allocated, existing TEC may not be considered appropriate for some generators.
 - Generators would notify National Grid of its desired LCN in advance of a pre-defined date
Working Group 3 concluded that this option appeared to be the most practical solution, although it was noted that the value notified will be limited to a generator's CEC. In the event that a generator did not notify National Grid of its desired LCN, the use of TEC as a default value seemed appropriate. In the instance that multiple generators wish to share an LCN, a process for notification will be required. Timescales for a generator to notify National Grid of its desired LCN value will be very much dependent on the transmission access products implemented.

6.0 WORKING GROUP ALTERNATIVE AMENDMENT

- 6.1 The original amendment stated that overrun would be on a zonal access product. Working Group 3 has developed a nodal model as an alternative to a zonal model. Working Group 1 discussed the implications for this on the principle of overrun under the CUSC and the 3 options for Charging.

- 6.2 Some members of the Working Group considered that a nodal model would be an improvement over a zonal model. This could facilitate more accurate charging thus be more cost reflective. Working Group 1 agreed that whilst there were advantages to a zonal model in principle, the analysis in Working Group 3 had reasonably demonstrated that a 1:1 sharing arrangement would not be practicable.
- 6.3 Working Group 1 agreed that the overall benefits for nodal overrun were similar to those for zonal, but it avoided the critical downside risks, and so agreed a nodal model should be taken forward as a Working Group Alternative Amendment. The detailed implications for charging are discussed in the Charging pre consultation; National Grid saw no obstacles to introducing any of the proposed changing methodologies on a nodal basis.
- 6.4 In terms of process the main difference between the nodal and zonal models is how the overrun volume is determined. In the Original amendment under a zonal model a Companies total access holding in a zonal would netted against the total metered volume in the same zone. Under the nodal proposal overrun volume would be determined at a nodal level (per Power Station level, the same as TEC currently). The access holding at a Power Station would be netted against the metered volume to establish the nodal overrun volume. For avoidance of doubt, as with TEC and TNUoS this would still permit zonal tariffs for Overrun. The working group agreed that the zoning methodology for Overrun should be part of the charging methodologies.
- 6.5 In summary the Working Group agreed one alternative, WGAA1, which is implementation of overrun at a nodal resolution.

7.0 ASSESSMENT AGAINST APPLICABLE CUSC OBJECTIVES

This section includes the Working Group initial views, following the consultation the Working Group will consolidate these with industry view for presentation to the Panel. Accordingly, views for an against are presented to ensure respondents are aware of all Working Group views.

Proposed Amendment

- 7.1 The Working Group considered the CAP 162 Original against the CUSC Objective(s);
- (a) the efficient discharge by the Licensee of the obligations imposed upon it by the act and the Transmission Licence;
- In principle CAP162 Original would permit greater use of the GB transmission system, however the concept of zones could not be efficiently integrated within the framework without the risk of significant costs, and therefore a zonal model did not better facilitate the CUSC applicable objective (a).
- Some members of the Working Group believed that the Original concept of overrun on a zonal basis provided the benefits discussed for the WGAA (section 7.2 a below) and that these overall outweighed the risk of increased costs.

- (b) facilitating effective competition in generation and supply of electricity and facilitating such competition in the sale, distribution and purchase of electricity.

CAP161 Original would facilitate more plant accessing the market which would have a beneficial impact on competition in the energy market, however the implication of 1:1 sharing on investment and operational costs would be borne by all users. Therefore CAP161 Original would not better facilitate CUSC applicable objective (b). operational costs would be borne by all users. Therefore CAP161 Original would not better facilitate CUSC applicable objective (b).

Some members of the Working Group believed that the Original concept of overrun on a zonal basis provided the benefits discussed for the WGAA (section 7.2 b below) and that these overall outweighed the risk of increased costs.

7.2 The Working Group considered the CAP 162 Working Group Alternative Amendment (nodal) against the CUSC Objective(s);

- (a) the efficient discharge by the Licensee of the obligations imposed upon it by the act and the Transmission Licence;

The majority of working group members believed that the WGAA:

- i. should allow Users to optimise the use of the GB transmission system but only when used in addition to acquiring or committing to acquire long-term access so that the charging system overall retains long term cost-reflectivity.
- ii. would facilitate access sharing and remove the possibility of a CUSC Breach.
- iii. would be available to all generator types and so is not discriminatory as long as it priced in such a way as to reflect any additional costs caused by overrunning and not encourage "free-riding". All Users will contribute to the residual element of cost recovery

Some Working Group members:

- iv. suggested that that linkage to more efficient long term access was overstated and was not relevant once an investment had been made, although recognised there was a longer term SQSS issue to ensure appropriate investment signals,
- v. believe that overrun will only encourage efficient investment if the additional local short-term (constraint) costs are reflected in Overrun prices and hence give appropriate long-term investment signals,
- vi. thought that overrun could be seen as making more efficient use of existing assets.

- (b) facilitating effective competition in generation and supply of electricity and facilitating such competition in the sale, distribution and purchase of electricity.

The majority of working group members believed that the WGAA:

- i. would allow more generation to connect to the GB transmission system and hence increase competition, although this volume

may be limited (as a facilitator, in combination with other proposals would have a greater impact).

- ii. flexibility of the product provided to users will allow more parties to compete effectively.

Some members suggested that:

- iii. the complexities and lack of transparency associated with this proposal will discourage investment in new generation and lead to increased risk premiums which will not facilitate competition
- iv. whilst overrun prices need to reflect any additional constraint costs; that it was also important that users have a reasonable idea of what these additional costs might be before they decide to overrun in any particular period. These working group members felt that the simple overrun pricing option may provide the most appropriate balance between these competing requirements.

- 7.3 The Working Group noted that facilitating competition depended strongly on the interaction with charging methodologies (of which the relevant objective also include facilitating competition), in particular the as cost reflectivity of the Overrun tariff and that all users contribute fairly to the 'residual'.

8.0 IMPACT ON NATIONAL GRID IS SYSTEMS

- 8.1 The conclusions of National Grid's initial IS impact assessment for the Original Amendment and the Working Group Alternative Amendment are summarised below. These conclusions are indicative only and are subject to change following further analysis.
- 8.2 Costs are identified as falling into one of three broad categories (less than £500k, £500k to £1m, and £1m to £5m). Timescales are indicated by stating whether or not the necessary systems can be delivered in time (for an assumed "first run" date) given various starting dates for the projects to deliver the systems. This approach has been followed for all of the CAPs in the TAR suite in order to provide consistency.
- 8.3 During the Working Group discussions it was noted that the choice of charging methodology is the key factor in determining the complexity and reliability of the systems required to support the implementation of CAP162. For this reason the impacts of the different charging methodologies have also been considered below. The Cost Recovery charging methodology is divided into two options, one in which the current system for degutting operational costs (BAAR) is used as is, and one in which it is modified.
- 8.4 It has been assumed that the use of overrun will be low enough that some parts of the solution could be manual processes. In particular, it should be noted that:
1. Credit checking would be a manual process.
 2. Some elements of the settlement process might require manual processes.

	Assumed date of decision by the Authority	First run	Months available if work begun after the Authority decision	Months available if work begun in Dec-08	Deliverable if work begun after Authority decision?	Deliverable if work begun in Dec-08?	<£500k	£500k - £1m	£1m - £5m
Original Zonal Simple	Jun-09	Apr-10	10	16	NO	YES		•	
Original Zonal Cost Recovery (BAAR as is)	Jun-09	Apr-10	10	16	NO	YES		•	
Original Zonal Cost Recovery (BAAR modified)	Jun-09	Apr-10	10	16	NO	NO		•	
Original Zonal Marginal	Jun-09	Apr-10	10	16	NO	NO			•
WGAA1 Power station Simple	Jun-09	Apr-10	10	16	NO	YES		•	
WGAA1 Power station (BAAR as is)	Jun-09	Apr-10	10	16	NO	YES		•	
WGAA1 Power station (BAAR modified)	Jun-09	Apr-10	10	16	NO	NO		•	
WGAA1 Power station Marginal	Jun-09	Apr-10	10	16	NO	NO			•

Where the above table indicates that if work starts in December 2008 it is feasible to deliver the necessary systems in time for the stated first run date, it may be assumed that any delay to the start of work would lead to an equivalent slip in the first run date.

- 8.5 The conclusions above could be affected by the content of the open letter on the related charging arrangements which National Grid intends to publish during the Company consultation period.
- 8.6 There are many limitations on the scope of this initial IS impact assessment. Examples include:
1. Only the impact on National Grid's IS systems has been assessed. The impact on CUSC parties' IS systems has not been assessed.
 2. Only the costs of the projects required to deliver the necessary systems have been estimated. Additional run-the-business costs relating to IS systems are likely to be incurred, these have not been estimated.
 3. There has been no analysis of any IS effort or systems required during the transition from the existing arrangement to the new arrangements.
 4. Each CAP and each option associated with it has been assessed in isolation. The impact on time and cost of multiple projects running in parallel has been ignored.
 5. National Grid has not assessed the work against its existing IS workload to assess resource availability.
- 8.7 A more accurate IS impact assessment for the Original Amendment and the Working Group Alternative Amendment would require a number of items which are not currently available. These include:
1. Definition of the business requirements for the Original Amendment and the Working Group Alternative Amendment in more detail than has been discussed by the Working Groups.
 2. Confirmation of certain technical assumptions which have been made during the initial analysis.
 3. Identification of the combination of CAPs 161-166 that is to be implemented and for each CAP that is to be implemented whether the Original Amendment or one of the Working Group Alternative Amendments is to be implemented.
- 8.8 Without prejudicing the decision of the Authority, National Grid intends to undertake further analysis between November 2008 and March 2009. This analysis will attempt to address point 1 above by making assumptions about the most likely detailed business requirements and will attempt to address point 2 by undertaking a number of feasibility studies. To address point 3 the analysis will consider the consequences a variety of possible combinations. The results of the analysis will be made available to CUSC parties and the Authority.

9.0 PROPOSED IMPLEMENTATION AND TRANSITION

- 9.1 The Working Group proposes that CAP162 should be implemented from 1st April 2010. The 1st April date is driven by the annual charges for entry capacity, which apply from the 1st April each year. IS system that would deal with consequential changes to residual and wider TNUoS charges will not be available until April 2010. Once these IS systems were implemented the Working Group saw no reason for being wedded to a charging year i.e. implementation on April 1st of any year.
- 9.2 Taking into account the time required for testing and trialling of the model the Working Group believes that there should be a six month lead time from a decision by the Authority and implementation of the associated changes. Therefore, the Working Group recommends an Implementation Date, for either the original CAP 162 Amendment Proposal or the Working Group Alternative Amendment Proposal of 1 April 2010 if an Authority decision is received on or before 30 September 2009, or 1 April 2011 if the Authority decision is received after 30 September 2009 but on or before 30 September 2010.
- 9.3 Implementation timescales will be most affected by the IS requirements for the charging changes. The above timescales would only be practicable for the Simple and Cost Recovery methodologies. Implementation of the Cost Recovery methodology in these timescales assumes that it is largely based on existing systems i.e. if a more robust system is required implementation could not be April 2010. The Marginal methodology algorithm would require a much longer lead time that could only be robustly established after a much more detailed IS impact study, which itself would take several months.
- 9.4 In order to implement daily billing in April 2010 through existing National Grid systems Ofgem would need to permit development of systems prior to a decision being made. National Grid clarified that any IS works prior to implementation were intended to implement the proposal in the report. It was agreed it was agreed that any further 'developments' or changes to the amendment would require a further amendment.
- 9.5 In the case of Cost Recovery and Marginal methodologies it was recognised that the Industry would benefit from seeing the successful model running for a period prior to implementation.
- 9.6 There is a risk associated with the lack of time to test any systems prior to implementation. The Working Group discussed the appropriate governance around the testing of the systems. The industry needs to have confidence before Go Live that the system is giving accurate results. Adding this testing period on to the design and build period would make implementation extreme unlikely for April 2010 for a robust Cost Recovery system and unachievable for fully functional Marginal systems.
- 9.7 During transition all affected bilateral connection agreements would need to be amended in accordance with the proposals in section 5 of this report i.e. to agree and include a value of LCN.

10.0 IMPACT ON THE CUSC

- 10.1 CAP162 will mainly impact on sections 2 and 3 of the CUSC in relation to the obligations on Users and National Grid with respect to the rights and obligations associated with export on to the transmission system.

- 10.2 There will also be changes to accommodate Local Capacity Nomination in the CUSC and bilateral agreements, new form to facilitate Local connection, and a number of credit and security changes associated with the revised connection arrangements and Overrun payment itself.
- 10.3 The Working Group agreed that LCN should be added to the TEC register. The transition arrangements for LCN have been discussed in section 5.
- 10.4 The text required to give effect to the WGAA is being developed with the Working Group. Once agreed this will be attached to the Company consultation for wider consultation as per the requirements of the CUSC. National Grid intends to request that legal drafting for the original is not submitted in accordance with CUSC 8.19.5.

11.0 IMPACT ON INDUSTRY DOCUMENTS

Impact on Core Industry Documents

- 11.1 Grid Code: This amendment can be implemented without requiring users to contravene existing obligations under the Grid Code. Other than possible definitional changes (subject to the legal text), the Working Group did not identify any significant changes to the Grid Code. The Working Group discussed the interaction with the obligation in the Balancing Codes on a number of occasions. The conclusion was that parties who Overrun will still be subject to all of the requirements in the Balancing Code, in particular to provide accurate Physical Notifications.
- 11.2 STC: This amendment will require new process and obligations in the STC framework to cater for the proposed local only application and LCN concept. The STC Committee are also considering transitional implications associated with this proposed amendment i.e. facilitating the earlier connection of existing contracted parties. The STC Committee is considering these changes.
- 11.3 BSC: None envisaged by the Working Group.

Impact on other Industry Documents

- 11.4 GB SQSS: Overrunning could lead to a non-compliant system and may require derogations to the GB SQSS. SQSS is being reviewed to establish impacts, not expected to delay implementation. If GB SQSS changes are not implemented prior to implementation transmission licensees may need to consider a transitional period with derogations from the GB SQSS.
- 11.5 The Working Group expects that the review of the GB SQSS will establish the process for facilitating local connections and interpretation of any changes to the signals derived from CUSC access products.
- 11.6 Transmission Licence: Within this report the possible implications on revenue flows and incentives has been identified. These are mainly transmission licence issues rather CUSC. National Grid is reviewing the possible implications for the transmission licence and will contact Ofgem directly to discuss these and agreeing an appropriate way of taking any changes forward, particular with respect to facilitating short term revenue flows through Balancing Services Use of System charges. National Grid expects that SO incentives would be taken forward as part of BSIS scheme developments, TO

incentives would need to be discussed separately. These arrangements could be implemented prior to April 2010 providing initial discussion and development is not delayed until the final decision.

- 11.7 Charging methodologies: The proposals have a number of implications on charging arrangements which have been mentioned in this report. Changes are being discussed through the charging methodologies governance arrangements. Implementation timescales are highlighted under section 8. A number of developments, GB ECM11 (local charging), GB ECM13 (residual charging) and GB ECM14, has been already been taken forward.

12.0 WORKING GROUP VIEW / RECOMMENDATION

- 12.1 The Working Group believes its Terms of Reference have been completed and CAP162 has been fully considered. At the final meeting on 18 November 2008 fifteen Working Group members cast votes:

Voting Results	For	Against	Abstain
Original better than Baseline	2	10	3
WGAA better than Baseline	15	0	0

- 12.2 The Working Group also voted on which of the Original or the WGAA better meets the CUSC applicable objectives:

Voting Results	For
Original best	0
WGAA1 best	15

- 12.3 The Working Group recommends to the CUSC Panel that:

- A consultation report containing the CAP162 Original and the WGAA should proceed to wider Industry Consultation as soon as possible.
- The Working Group report is accepted by the CUSC Panel and the Working Group is disbanded once legal text has been agreed.

13.0 NATIONAL GRID INITIALVIEW

- 13.1 National Grid does not support implementation of the CAP162 Original proposal due to the issues associated with zonal definition of access rights identified during the Working Group assessment.
- 13.2 The analysis work performed by National Grid demonstrates that the risk of increased socialised constraint costs is unacceptable and would not better facilitate the efficient discharge by the Licensee of the obligations imposed upon it by the act and the Transmission Licence, particularly the requirement to be economic and efficient. In addition, the original proposal would not better facilitate competition since it would expose users to significant socialised costs which they would not be in a position to control.
- 13.3 National Grid does support the implementation of the Working Group Alternative Amendment that retains the nodal definition of access. This proposal introduces arrangements that, whilst not as flexible for users as those initially proposed, do provide practical means to exceed booked transmission access rights without the associated increase in socialised constraint costs.

- 13.4 The Working Group Alternative Amendment better facilitates the efficient discharge by the Licensee of the obligations imposed upon it by the Act and the Transmission Licence by allowing users at power stations with different operating regimes to exceed booked capacity when, in their view, it is economic to do so. These users will only apply for additional long term access rights if overrun is not economic, and this would improve the signal provided to National Grid to invest in the transmission system leading to the development of a more economic and efficient transmission system. The Working Group Alternative Amendment better facilitates competition by providing alternative transmission access options for new entrants, and by potentially freeing long-term access rights for use by others if existing users choose to overrun, for all or a portion of their capability, and therefore optimise their long-term access rights holdings.

14.0 INDUSTRY VIEWS AND REPRESENTATIONS

14.1 Responses to the Working Group Consultation

14.1.1 The following table provides an overview of the representations received. Copies of the representations are contained in Working Group Report Volume 2.

Reference	Company	Supportive
CAP162-WGC-01	Scottish Renewables	Supportive
CAP162-WGC-02	Scottish Power	Supportive
CAP162-WGC-03	Wind Energy	
CAP162-WGC-04	Welsh Power	
CAP162-WGC-05	Scottish and Southern Energy	Broadly supportive
CAP162-WGC-06	Gaz De France	Supportive
CAP162-WGC-07	International Power	Supportive
CAP162-WGC-08	E.ON UK	Supportive
CAP162-WGC-09	EDF Energy	No
CAP162-WGC-10	DONG Walney	
CAP162-WGC-12	Centrica	Supportive
CAP162-WGC-13	BWEA	Supportive of concept
CAP162-WGC-14	British Energy	Supportive
CAP162-WGC-15	Renewable Energy Association	Supportive
CAP162-WGC-16	Nuclear Decommissioning Authority	Supportive
CAP162-WGC-17	ESB International	Supportive
CAP162-WGC-18	RWE	Supportive
CAP162-WGC-19	Immingham CHP	Supportive
CAP162-WGC-21	Drax Power	Not in principle
CAP162-WGC-22	AEP	Supportive

14.2 The following table provides an overview of the Working Group Consultation Requests received. Copies of the representations are contained in Working Group Report Volume 2.

Reference	Company	Details of the proposal	Working Group Comments
CAP162-WGCR-01	EDF energy	Simple tariff based on BSUoS. Proposal removes link to imbalance pricing	The working group agreed not to take forward as a WGAA on the basis that it was a charging issue. National Grid that it could be considered along with responses to charging pre consultation GBECM14.

14.3 Views of Panel Members

To be inserted after the Panel vote

14.4 Views of Core Industry Document Owners

14.4.1 National Grid has been in contact with the directly affected code owners discussed in this report. The most significant of these is the STC. A representative of the STC attended the Working Group as an observer and the STCC are progressing the necessary changes. Other code Panels received the Working Group reports and have made no representations to the Working Group Consultation.

ANNEX 1 – GLOSSARY AND ACRONYMS

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ANNEX 2 – PROPOSED LEGAL TEXT TO MODIFY THE CUSC

To be agreed with the Working Group and inserted for the company consultation.

Part A - Text to give effect to the Original Proposed Amendment

National Grid to request under CUSC 8.19.5 that this is not submitted.

Part B - Text to give effect to the Working Group Alternative Amendment

ANNEX 3 – WORKING GROUP TERMS OF REFERENCE AND MEMBERSHIP

Working Group Terms of Reference and Membership

TERMS OF REFERENCE FOR CAP161-164 WORKING GROUP 'ACCESS WORKING GROUP 1'

RESPONSIBILITIES

1. The Working Group is responsible for assisting the CUSC Amendments Panel in the evaluation of CUSC Amendment Proposals CAP161, 162, 163 and 164 tabled by National Grid at the Amendments Panel meeting on 25th April 2008.
2. The proposals must be evaluated to consider whether each of them better facilitates achievement of the applicable CUSC objectives. These can be summarised as follows:
 - (a) the efficient discharge by the Licensee of the obligations imposed on it by the Act and the Transmission Licence; and
 - (b) facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the sale, distribution and purchase of electricity.
3. It should be noted that additional provisions apply where it is proposed to modify the CUSC amendment provisions, and generally reference should be made to the Transmission Licence for the full definition of the term.

SCOPE OF WORK

4. The Working Group must consider the issues raised by the Amendment Proposals and consider if each of the proposals identified better facilitates achievement of the Applicable CUSC Objectives.
5. In addition to the overriding requirement of paragraph 4, the Working Group shall consider and report on the following specific issues:
 - Impact on bilateral agreements (BCA, BEGAs, CONSAG, Offers etc.)
 - Impact on core industry documents and other documents (incl. Transmission License)
 - Impact on computing systems, central and individual CUSC party
 - Application process and impact on bilateral agreements for short-term access
 - Implementation and transition requirements, including timescales
 - The impact on System Operator costs, internal and external
 - A cost benefit analysis, including market impacts and the cost of carbon¹³

¹³ Taken account of Ofgem guidance with respect to:

<http://www.ofgem.gov.uk/Licensing/IndCodes/Governance/Documents1/Code%20objectives%20lette>

- Efficient investment signals [generation, transmission & interconnectors]
 - Definitions, including the interaction with other codes and methodologies
 - Offshore arrangements
 - Applicability to embedded generation
 - Credit and security requirement implications
 - Impact on the demand (exit) arrangements
 - Overall revenue recovery (TNUoS, BSUoS and other charges)
 - Impact assessment on all users and licensees
 - The CUSC linkages to the charging methodologies
 - Impact of short term access on existing CUSC Parties long term rights
 - Impact on Security of Supply
 - Impact on Maintenance of the Reliability, Safety & Operation of the Grid
 - Limiting participation to physical players
- 5a. For CAP161, System Operator Release of Short-term Entry Rights, the working group shall also consider and report on the following specific issues:
- Impact on existing short term products, LDTEC and STTEC
 - The auction process
 - Temporal definition of the product(s)
 - Transparency of information required before and after auction
 - The process for recording contractual holding or access rights
 - The payment process [assuming pay as bid is not a charging issue]
 - Requirement for and implications of any restrictions to the product e.g. a buyback price cap
 - Ensuring that the arrangements do not unduly discriminate against any particular plant type or range of plant types
 - Consistency with European regulations
 - The need for a short term baseline for zonal release
 - Economic release criterion
 - Who should run the auction
- 5b. For CAP162, Entry Overrun, the working group shall also consider and report on the following specific issues:
- Local allocation and physical asset capability limits
 - Interaction with the provision of Balancing Services (including services such as frequency response, MaxGen Service and black start)
 - Settlement process, including resolution of settlement (e.g. half hour)
 - Lessons learnt from (and interaction with) cashout in the BSC
 - Ensuring that the arrangements do not unduly discriminate against any particular plant type or range of plant types
 - Additional information transparency
- 5c. For CAP163, Entry Capacity Sharing, the working group shall also consider and report on the following specific issues:
- The notification process
 - The transition arrangements for moving towards a sharing product
- 5d. For CAP164, Connect and Manage, the working group shall also consider and report on the following specific issues:
- The lead time for connection

[r%20-%20final%20for%20external%20publication.pdf](#) (note link to CUSC WG established on carbon analysis)

- Consider the transparency of bilateral changes to the connection date, including consideration of pre-defined circumstances by which this would be possible
 - The appropriateness of the symmetry in rights and obligations
 - The transition arrangements for existing contracts
 - Interaction with other short term products
- 5e This working group shall have a sub group, to be known as “Access Working Group 3”. The Terms of Reference for Access Working Group 3 shall be agreed by the Amendments Panel and shall include the consideration of a number of enabling changes, principally:
- Zonal access rights
 - Local only applications
 - Zoning criteria
 - Local asset charging
 - Residual charging
 - Credit requirements for TNUoS charges based on a kWh element.
6. The Working Group is responsible for the formulation and evaluation of any Working Group Alternative Amendments (WGAAs) arising from Group discussions which would, as compared with the Amendment Proposals, better facilitate achieving the applicable CUSC objectives in relation to the issue or defect identified.
7. The Working Group should become conversant with the definition of Working Group Alternative Amendments which appears in Section 11 (Interpretation and Definitions) of the CUSC. The definition entitles the Group and/or an individual Member of the Working Group to put forward a Working Group Alternative Amendment if the Member(s) genuinely believes the Alternative would better facilitate the achievement of the Applicable CUSC Objectives. The extent of the support for the Amendment Proposals or any Working Group Alternative Amendments arising from the Working Group’s discussions should be clearly described in the final Working Group Report to the CUSC Amendments Panel.
8. There is an obligation on the Working Group Members to propose the minimum number of Working Group Alternatives where possible.
9. All proposed Working Group Alternatives should include the proposer(s) details within the Final Working Group Report, for the avoidance of doubt this includes Alternative(s) which are proposed by the entire Working Group or subset of members.
10. There is an obligation on the Working group to undertake a period of Consultation in accordance with CUSC 8.17. The Working Group Consultation period shall be for a period of 4 weeks as determined by the Amendment Panel.
11. Following the Consultation period the Working Group is required to consider all responses including any WG Consultation requests. As appropriate the Working Group will be required to undertake any further analysis and update the Original and/or Working Group Alternatives. All responses including any WG Consultation Requests shall be included within the final report including a summary of the working Groups deliberations and conclusions

12. The Working Group is to submit their final report to the CUSC Panel Secretary on **17th July 2008** for circulation to Panel Members. The conclusions will be presented to the CUSC Panel meeting on **25 July 2008**.

MEMBERSHIP

13. It is recommended that the Working Group has the following members:

Chair	Hêdd Roberts (National Grid)
National Grid	Patrick Hynes (Proposer)
Industry Representatives	James Anderson
	Bob Brown
	Graeme Cooper
	Tony Dicicco
	Richard Ford
	Garth Graham
	Paul Jones
	Simon Lord
	Paul Mott
	Rekha Patel
	Rob Rome
	Tim Russell
	Helen Snodin
	Merel van der Neut Kolfshoten
	Barbara Vest
Authority Representative	David Hunt
Technical Secretary	Kathryn Sorrell
	Jeremy Caplin (Technical Advisor)
	STC (Technical Advisor)

NB: Working Group must comprise at least 5 Members (who may be Panel Members)

14. The Chair of the Working Group and the Chair of the CUSC Panel must agree a number that will be quorum for each Working Group meeting. The agreed figure for CAP161, 162, 163 and 164 is that at least 5 Working Group members must participate in a meeting for quorum to be met.
15. A vote is to take place by all eligible Working Group members (for the avoidance of doubt, that is (i) the Proposer (National Grid) and (ii) the Industry representatives listed above) on the proposal and each Working Group Alternative, as appropriate, as to whether it better facilitates the CUSC Applicable Objectives and indicate which option is considered the BEST with regard to the CUSC Applicable Objectives. Working Group Members will be given not less than five business days notice of the meeting at which the vote will take place. The results from the vote shall be recorded in the Working Group Report.
16. Working Group Members or their appointed alternate is required to attend a minimum of 50% of the Working Group Meetings to be eligible to participate in the Working Group vote.

17. The Technical Secretary to keep an Attendance Record, for the Working Group meetings and to circulate the Attendance Record with the Action Notes after each meeting. This will be attached to the Final Working Report.
18. The membership can be amended from time to time by the CUSC Amendments Panel.
19. If any Working Group Member wishes to nominate an Alternate (to act on their behalf in their absence from meetings) then this should be sent to the Working Group Chair once the Working Group is under way who will confirm (to the Working Group Member) that the Alternate is duly designated. For the avoidance of doubt if the Working Group Chair believes the suggested Alternate does not have sufficient expertise in the issues being considered by the Working Group they will ask the Working Group Member to suggest a more suitable Alternate.
20. Observers may be permitted by the Chair to attend any meeting. It should be noted that the observer (i) will not have a vote and (ii) cannot speak unless asked to do so by the Chair. Any CUSC Party wishing to be an observer should agree with the Working Group Chair advance .The Chair may invite - +additional industry experts to any meeting as required to ensure efficient and comprehensive coverage of the agenda.

RELATIONSHIP WITH AMENDMENTS PANEL

21. The Working Group shall seek the views of the Amendments Panel before taking on any significant amount of work. In this event the Working Group Chair should contact the CUSC Panel Secretary.
22. The Working Group shall seek the Amendments Panel advice if a significant issue is raised during the Consultation process which would require a second period of Consultation in accordance with 8.17.17.
23. Where the Working Group requires instruction, clarification or guidance from the Amendments Panel, particularly in relation to their Scope of Work, the Working Group Chair should contact the CUSC Panel Secretary.
24. The working group shall maintain a register of assumptions and issues, which shall be published and reported to the Amendments Panel and other Transmission Access working groups on a regular basis.

MEETINGS

25. The Working Group shall, unless determined otherwise by the Amendments Panel, develop and adopt its own internal working procedures and provide a copy to the Panel Secretary for each of its Amendment Proposals.
26. To ensure an efficient process (and mindful of room logistics) only the Working Group Member or their appointed Alternate can attend a meeting. If an alternate wishes to attend the same meeting as their associated member this will be as an observer (under item 18. above) unless they have previously agreed with the Working Group Chair.

REPORTING

27. The Working Group Chair shall prepare final reports to the **25th July** Amendments Panel responding to the matter set out in the Terms of Reference.
28. A draft Working Group report will be produced individually for each of CAP161, 162, 163 and 164. Each draft working group report will include the relevant information from Access Working Group 3.
29. A draft Working Group Report must be circulated to Working Group members with not less than five business days given for comments.
30. Any unresolved comments within the Working Group must be reflected in the final Working Group Report.
31. The Working Group Chair (or another Working Group member nominated by him) will present the Working Group report to the Amendments Panel as required.

Sub-Group Terms of Reference and Membership

TERMS OF REFERENCE FOR SUB GROUP FOR CAP161-166 WORKING GROUPS, 'ACCESS WORKING GROUP 3'

RESPONSIBILITIES

1. The Sub-Group is responsible for assisting the two Working Groups established by the CUSC Amendments Panel for CAP161-66, which were tabled by National Grid at the Amendments Panel meeting on 25th April 2008.
2. The Sub-Group is established to evaluate the enabling elements of CAP161-166 and must be evaluated to consider whether the enabling elements better facilitate achievement of the applicable CUSC objectives. These can be summarised as follows:
 - (c) the efficient discharge by the Licensee of the obligations imposed on it by the Act and the Transmission Licence; and
 - (d) facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the sale, distribution and purchase of electricity.
3. It should be noted that additional provisions apply where it is proposed to modify the CUSC amendment provisions, and generally reference should be made to the Transmission Licence for the full definition of the term.

SCOPE OF WORK

4. The Sub-Group must consider the enabling elements and issues raised by the Amendment Proposals and consider if the proposals identified better facilitate achievement of the Applicable CUSC Objectives.
5. In addition to the overriding requirement of paragraph 4, the Sub-Group shall consider and report to the Working Groups on the appropriateness, or otherwise of the following specific issues:
 - Application process for acquiring long and short-term access products.
 - Implications for moving from nodal access rights to zonal access rights.
 - Consideration of levels of security and credit requirements for commoditised residual generation tariff.
 - Impact on core industry documents.
 - Impact on IT systems.
 - Necessity for an impact assessment from a User perspective.
 - Impact on the transparency in the calculation of TNUoS tariffs and the User's ability to replicate these using the DCLF ICRP model.
 - Consideration of issues associated with SQSS.
 - Linkage with embedded generation.
 - Linkage with offshore transmission.

6. As a Sub-Group of the Working Groups for CAP161-166, the Group will where appropriate, provide input into the formulation and evaluation of any Working Group Alternative Amendments (WGAAs).
7. There is an obligation on the Working Group to undertake a period of Consultation in accordance with CUSC 8.17. The Working Group Consultation period shall be for a period of 4 weeks as determined by the Amendment Panel.
8. Following the Consultation period the Working Group is required to consider all responses including any WG Consultation requests. As appropriate the Working Group will be required to undertake any further analysis and update the Original and/or Working Group Alternatives. All responses including any WG Consultation Requests shall be included within the final report including a summary of the working Groups deliberations and conclusions.
9. The Sub-Group is to submit their final report to the Working Groups and the CUSC Panel Secretary on 17th July 2008 for circulation to Panel Members. The conclusions will be presented to the CUSC Panel meeting on 25 July 2008.

MEMBERSHIP

10. It is recommended that the Sub-Group has the following members:

Chair	Hëdd Roberts (National Grid)
National Grid Representative	Craig Maloney
Industry Representatives	Graeme Cooper
	Paul Jones
	Allan Kelly
	David Lewis
	Robert Longden
	Simon Lord
	Frank Prashad
	Louise Schmitz
	Nigel Scott / Helen Snodin
	Dennis Timmins
	Dave Wilkerson
	Barbara Vest
Technical Expert	Beehun Tan/ Qiong Zhou (Jo)
Authority Representative	Anthony Mungall
Technical Secretary	Tom Ireland (National Grid)

NB: The Sub-Group must comprise at least 5 Industry Representatives (who may be Panel Members)

11. The Chair of the Sub-Group and the Chair of the CUSC Panel must agree a number that will be quorum for each Sub-Group meeting. The agreed figure is that at least 5 Sub-Group members must participate in a meeting for quorum to be met.
12. The Technical Secretary to keep an Attendance Record, for the Sub-Group meetings and to circulate the Attendance Record with the Action Notes after each meeting. This will be attached to the Final Sub-Group Report. The Chair will circulate the Working Group Report after each meeting.
13. The membership can be amended from time to time by the CUSC Amendments Panel.

RELATIONSHIP WITH AMENDMENTS PANEL

14. The Sub-Group shall seek the views of the Amendments Panel and Working Groups 1 and 2 before making a significant change to the scope of work. In this event the Sub-Group Chairman should contact the CUSC Panel Secretary.
15. The Working Group shall seek the Amendments Panel advice if a significant issue is raised during the Consultation process which would require a second period of consultation in accordance with 8.17.17.
16. Where the Sub-Group requires instruction, clarification or guidance from the Amendments Panel and Working Groups 1 and 2, particularly in relation to their Scope of Work, the Sub-Group Chairman should contact the CUSC Panel Secretary.

MEETINGS

17. The Sub-Group shall, unless determined otherwise by the Amendments Panel, develop and adopt its own internal working procedures and provide a copy to the Panel Secretary for each of its enabling elements of the Amendment Proposals.

REPORTING

18. The Sub-Group Chairman shall prepare a final report to the 25th July 2008 Amendments Panel responding to the matter set out in the Terms of Reference.
19. A draft Sub-Group Report must be circulated to Sub-Group members with not less than five business days given for comments.
20. Any unresolved comments within the Sub-Group must be reflected in the final Sub-Group Report.
21. The Chairman (or another member nominated by him) will present the Sub-Group report to the Amendments Panel as required.
22. An updated risk register will be published and discussed as a standing agenda item at each TCMF.

ANNEX 4 – WORKING GROUP ATTENDANCE REGISTER

Working group 1:

Working Group members	13	28	10	23	8	18	6	20	3	10	19	23	5	12
	May		Jun		Jul		Aug		Sep		Oct		Nov	
James Anderson	✓	✓	✓	✓	6		✓	✓	✓	✓	✓	✓	✓	✓
Bob Brown	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓
Graeme Cooper		✓		✓	✓	✓					✓		✓	✓
Tony Diccio	✓	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Richard Ford	✓	✓	✓	✓	✓		✓		✓	✓			✓	
Garth Graham	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Paul Jones	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓
Simon Lord	✓	2	✓	✓	✓	✓	✓	2	2	2	✓		2	✓
Paul Mott	✓		✓	✓	✓	✓	✓	8	✓	8	✓		✓	✓
Rekha Patel	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rob Rome	✓	✓	✓	✓	✓	✓	✓	✓		✓	9		9	✓
Tim Russell	✓	✓	✓	✓	7	✓		✓	✓	✓	✓	✓	✓	✓
Helen Snodin	✓	3	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Merel van der Neut Kolschoten	✓	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Barbara Vest	✓	✓	5	✓	✓	✓		✓	✓	✓	5	✓		
Patrick Hynes	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓
Hêdd Roberts (Chair)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kathryn Sorrell (Tec Sec)	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓

Invitees, alternates and observers	13	28	10	23	8	18	6	20	3	10	19	23	5	12
	May		Jun		Jul		Aug		Sep		Oct		Nov	
Jeremy Caplin (NG)	✓	✓	✓	✓			✓	✓	✓	✓	✓			
David Hunt (Ofgem)		✓	✓	✓	✓	✓	✓	✓			✓	✓		✓
Deborah MacPherson (STC)	✓	✓		✓	✓			✓	✓		✓	✓	✓	✓
Min Zhu (Ofgem)	✓								✓	✓				
Brian Taylor (NG)	✓													
Andy Rimmer		2						2	2	2			2	
Fiona Navesey		4												
Dennis Timmins		1												
Nigel Scott		3												
Ian Moss			5	✓	✓	✓	✓		✓		5			
Emma Luckhurst								8		8				
Stuart Cook (Ofgem)					✓									
Gerry Hoggan					6									
Paul Hurlock (National Grid)					✓	✓								
Gaynor H					7									
Ian Lomas (BERR)							✓							
Kevin Dibble								2						
Louise Schmitz											9		9	

Working group 3:

Date	12-May	27-May	04-Jun	16-Jun	29-Jun	13-Jul	29-Jul	13-Aug	22-Aug	02-Sep	12-Sep	25-Sep	10-Nov	
Meeting No.	1	2	3	4	5	6	7	8	9	10	11	12	13	
Allan Kelly	1	1	1	1	1	1		1	1	Cancelled				
Anthony Mungall	1	1		1		1		1			1			1
Barbara Vest	1				1	1	1	1				1	1	
Craig Maloney	1	1	1	1	1	1	1	1	1			1	1	1
Dave Wilkerson	1	1	1	1	1	1	1					1	1	1
Dennis Timmins	1		1	1	1	1	1				1		1	1
Frank Prashad	1		1	1	1	1	1	1	1			1	1	
Hëdd Roberts	1	1	1	1	1	1	1	1	1			1	1	1
Louise Schmitz	1	1	1	1	1	1	1	1	1			1	1	1
Helen Snoddin (N Scott)	1	1	1	1	1	1	1	1	1			1	1	1
Paul Jones	1	1	1	1	1		1	1	1			1		1
Robert Longden	1	1		1		1	1	1	1			1		1
Simon Lord	1			1	1	1	1					1	1	1
David Lewis	1				1	1	1	1	1					
Bee Hun Tan				1	1	1	1	1	1			1	1	
Tom Ireland	1	1	1	1	1	1	1	1	1			1		1
Chris Barrass	1	1		1		1	1							
Qiong Zhou (Jo)	1	1		1	1	1	1	1	1			1	1	
Brian Taylor		1												
Michael Dodd			1		1		1		1				1	
Sebastian Eyre			1			1								
Emma Luckhurst			1		1	1	1					1	1	
Andrew Rimmer			1											
Dan Jerwood			1											
Stefan Leedham				1										
Stephan Curtis				1	1		1	1				1	1	1
Garth Graham					1									
Owen Wilkes					1									
David Walker						1								
Stuart Cotton						1	1	1						
James Anderson							1					1		
Stuart Cook						1					1			
David Scott													1	

ANNEX 5 – AMENDMENT PROPOSAL FORM

CUSC Amendment Proposal Form	CAP: 162
Title of Amendment Proposal: Transmission Access - Entry Overrun	
<p>Description of the Proposed Amendment (<i>mandatory by proposer</i>):</p> <p>Creation of a commercial mechanism for dealing with export above existing entry access capacity holdings.</p> <p>This proposal would permit Generators to export in excess of their total entry access capacity holding (currently sum of TEC, LDTEC, STTEC). Export would be capped by “local” rather than “wider” system capability limits (e.g. CEC and any local transmission limits as detailed in the bilateral agreement), subject to continued Grid Code compliance. The additional volume of entry access used above existing entry access capacity holding would be ‘Entry Overrun’.</p> <p>For the purposes of this amendment, it is suggested that the charging arrangements (codified in the charging methodologies) for Entry Overrun would establish charges related to the cost imposed of accommodating Entry Overrun.</p> <p>Appropriate credit will be required. The level required would be established in the assessment stage in accordance with the Best Practice Guidelines for Gas and Electricity Network Operator Credit Cover.</p> <p>This amendment includes a revised process for ‘local only’ applications (connection without long-term entry rights for the wider system) and a change in the nature of long-term and short-term entry rights from nodal to zonal. The zones used would be consistent across all long-term and short-term products. The proposer suggests that in order to ensure equitable treatment of non locational asset costs that the residual charge should be commoditised.</p> <p>For illustrative purposes, a more detailed Entry Overrun straw man is attached.</p>	
<p>Description of Issue or Defect that Proposed Amendment seeks to Address (<i>mandatory by proposer</i>):</p> <p>The lack of flexibility of short-term products and the application process for current entry access products can restrict the efficient use of spare capacity and efficient redistribution of previously allocated capacity.</p> <p>In addition, under the current arrangements, users who release long-term entry access rights are committing not to export. This can lead to potential overbooking of long-term rights, delayed connection and a reliance on administered rules for determining the appropriate level of sharing of transmission capacity between users.</p> <p>Furthermore, breach of CUSC for exceeding entry access capability is inappropriate in an environment where generators are operating in a more flexible manner; and encourages users to overbook capacity or restrict efficient operation.</p>	
<p>Impact on the CUSC (<i>this should be given where possible</i>):</p> <p>The main impact on the CUSC will be on sections 2 and 3 in relation to the obligations on Users and National Grid with respect to the rights and obligations associated with export on to the transmission system.</p> <p>There may be also be impacts on the credit requirements in sections 2 and 3 to cover any additional liabilities associated with overrun charging.</p>	

Impact on Core Industry Documentation *(this should be given where possible):*

To be identified during assessment.

The Planning Code and Data Registration Code of the Grid Code to reflect the ability of a party to export in excess of their total entry access holding, and ensure that Connections conditions are maintained throughout the full range of operations.

Impact on Computer Systems and Processes used by CUSC Parties *(this should be given where possible):*

It is envisaged that data would be required from the Balancing Mechanism / Settlement systems to feed into a new the Entry Overrun tariff settling and billing systems. Note that this impact is associated with the consequential charging change rather than Entry Overrun per se.

Details of any Related Modifications to Other Industry Codes *(where known):*

The charging methodologies, to develop charging arrangements for Entry Overrun consistent with the relevant objectives contained in the transmission licence.

The Security and Quality Supply Standards, to consider the implications for design of the transmission system of a short term product.

Entry Overrun will interact with System Operator revenues. The System Operator incentive arrangements will need to provide the appropriate incentives on the System Operator to seek to accommodate overrun in an efficient and economic manner.

Justification for Proposed Amendment with Reference to Applicable CUSC Objectives** *(mandatory by proposer):*

The proposed amendment would better facilitate the achievement of Applicable CUSC Objectives (a) the efficient discharge by the licensee of the obligations imposed upon it under the Acts and by the licence; and (b) facilitating effective competition in generation, by:

- Promoting the more efficient use of the transmission system through allowing parties to connect in advance of wider transmission works.
- Improving the signals for design of the transmission system through creating an alternative to firm long-term access products priced to reflect asset costs. This would particularly be the case against the forecast increase in plant margins and forecast increase in the use of generation from intermittent sources. This may suit a range of plant types.
- Providing for the release of long-term entry access rights from existing plant thus facilitating early entry in to the market for new plant.

Details of Proposer: Organisation's Name:	National Grid
Capacity in which the Amendment is being proposed: (i.e. CUSC Party, BSC Party or "energywatch")	CUSC Party
Details of Proposer's Representative: Name: Organisation: Telephone Number: Email Address:	Patrick Hynes National Grid 01926656319 Patrick.hynes@uk.ngrid.com
Details of Representative's Alternate: Name: Organisation: Telephone Number: Email Address:	Duncan Burt National Grid 01926656703 duncan.burt@uk.ngrid.com
Attachments (Yes/No): Yes If Yes, Title and No. of pages of each Attachment: Entry Overrun Straw man, 3 pages	

Notes:

1. Those wishing to propose an Amendment to the CUSC should do so by filling in this "Amendment Proposal Form" that is based on the provisions contained in Section 8.15 of the CUSC. The form seeks to ascertain details about the Amendment Proposal so that the Amendments Panel can determine more clearly whether the proposal should be considered by a Working Group or go straight to wider National Grid Consultation.
2. The Panel Secretary will check that the form has been completed, in accordance with the requirements of the CUSC, prior to submitting it to the Panel. If the Panel Secretary accepts the Amendment Proposal form as complete, then he will write back to the Proposer informing him of the reference number for the Amendment Proposal and the date on which the Proposal will be considered by the Panel. If, in the opinion of the Panel Secretary, the form fails to provide the information required in the CUSC, then he may reject the Proposal. The Panel Secretary will inform the Proposer of the rejection and report the matter to the Panel at their next meeting. The Panel can reverse the Panel Secretary's decision and if this happens the Panel Secretary will inform the Proposer.

The completed form should be returned to:

Beverley Viney
Panel Secretary
Commercial Frameworks
National Grid
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

Or via e-mail to: Beverley.Viney@uk.ngrid.com

(Participants submitting this form by email will need to send a statement to the effect that the proposer acknowledges that on acceptance of the proposal for consideration by the Amendments Panel, a proposer which is not a CUSC Party shall grant a licence in accordance with Paragraph 8.15.7 of the CUSC. A Proposer that is a CUSC Party shall be deemed to have granted this Licence).

3. Applicable CUSC Objectives** - These are defined within the National Grid Electricity Transmission plc Licence under Section C7F, paragraph 15. Reference should be made to this section when considering a proposed amendment.

Entry Overrun Straw Man

Introduction

This straw man covers the main process for Entry Overrun, one of a number of proposed incremental changes to electricity access arrangements.

Based on key building blocks in the TAR report, Entry Overrun is described as:

Nature of rights: a power station may export up to its local access capability (see below). The right is enduring. The user has no effective¹⁴ right to compensation if overrun cannot be accommodated by the System Operator.

Allocation: all users have the right to overrun up to any local asset capability.

Pricing: the right will be priced ex post based on the costs incurred in facilitating the overrun. A user may set a ceiling bid through the BM, however the System Operator is not necessarily obliged to accept the bid.

Secondary trading: the right cannot be traded.

Model description

Any Generator will be permitted to export power on to the transmission system at any Power Station up to the allocated physical capability of the local assets (Power Stations CEC and local asset capability¹⁵). Power Stations must have a completed compliant local connection prior to being able to overrun.

The proposal allows an extremely small granularity of product, down to half hour, set by the user on the day. Settlement will be on an aggregated output over a half hourly, although local asset capability must not be exceeded on a minute by minute basis. As described Entry Overrun seeks to minimise the transaction costs associated with gaining short-term access.

It is envisaged that the settlement and charging process will be based on zones, and be by company (registered CUSC party). Any output above contracted access level will be charged at the cost of facilitating that Entry Overrun by National Grid. Timescales for settlement will be broadly similar to BSUoS timescales (1/2 hour periods with a 28 day rolling settlement).

Entry Overrun charges will be the zonal Entry Overrun price multiplied by the Entry Overrun volume. Simply, the Entry Overrun volume is the metered volume, corrected for BOAs (should take back to PNs), minus the firm access right holding (either long-term or short-term). The exact definition of Entry Overrun volume will be established in the assessment stage. The methodology for establishing zonal Entry Overrun prices will be part of the charging methodologies. During the assessment stage National Grid intend to put forward a number of possible methodologies that vary the balance of cost reflectivity, simplicity, transparency, implementation cost and timescales. Initially, National Grid's central model is a derivation of the current internal costing tool as discussed at the TASG in 2007¹⁶. Subject to more detailed costing of the IS tools, implementation would be April 2010. To facilitate earlier implementation a two stage approach, with very limited IS development and 'basic' pricing, could be considered.

¹⁴ Whilst the users that overrun can submit bids in to the balancing mechanism (BM), these bids may also set the overrun charge. Therefore the charge effectively removes the compensation paid through the BM. In these circumstances, the charge and the bid may be exactly the same, subject to the development of the overrun pricing methodology.

¹⁵ A new term, local asset capability to reflect the intra zonal capacity beyond the local substation (e.g. local radial connecting routes). This limit is expressed in MW or MVA and can not be exceeded by the user without permission or instruction from National Grid.

¹⁶ <http://www.nationalgrid.com/NR/rdonlyres/7DFB1235-5741-4744-9C9F-54B8CBC2F1A1/19202/PresentationNationalGridIntrotoconstraintcostingan.pdf>

In National Grid's central pricing model the zonal overrun price is the volume weighted average price of all actions taken to accommodate Entry Overrun in a particular zone (the actions may be outside that zone), along with the system cost of replacement actions and headroom¹⁷ issues. Marginal pricing should also be considered during development of the charging options.

In order to allow a generator to limit financial exposure to the ex-post nature of Entry Overrun prices and to allow the System Operator to maintain physical security of the system, parties who overrun will still 'participate' in the Balancing Mechanism. An individual Generator's overrun volume will be 'corrected' by its bid volumes to ensure charges for overrun recover revenues paid through the BM, i.e. removing compensation paid to users who have no rights. A Generator intends to overrun yet subsequently has a bid accepted will be exposed to the net difference of bid income minus the Entry Overrun price. The Entry Overrun price includes replacement cost and may be an average and therefore there will be some residual exposure to the difference between bid price and overrun charge.

Assumptions

1. The price calculation methodology will be in the charging statements and be assessed on the existing charging relevant objectives.
2. Generators comply with the Grid Code. In particular, submission of accurate PNs on a unit basis in the prescribed timescales.
3. The TNUoS residual charge is commoditised, i.e. charged half hourly on a MWh basis. This provides fair allocation of non locational costs between system users holding both long term and short term access.
4. Acceptance of an offer in the BM does **not** confer any firm access right. Generators may still be exposed to overrun if the full output is not covered by existing entry access holding and therefore would submit BM prices accordingly (i.e. including the risk of an Entry Overrun charge).
5. Credit will be in place for Entry Overrun. This may require a short term process of managing credit liability.
6. There will be a licence methodology for establishing and managing zones.
7. The zones will be the same as those used for access products and consistent with the charging methodologies.
8. There is no benefit paid for Entry Overrun in an importing zone in the average price /cost recovery model.
9. All new capacities will be published in the SYS i.e. a generators local assets capability.

Initial ex-post pricing model

The model below is a basic model that could be further developed during the assessment stage, including the drafting of the Entry Overrun charging methodology. Other models may also be considered that could better facilitate the applicable charging objectives.

The basic model is:

- o Entry Overrun prices will be posted on working day +1 at 1600hrs (not posted weekends or Bank Holidays).
- o The methodology is based on an average tariff and set for cost recovery, including the
 - o the cost of constraining plant
 - o the cost of replacing plant

¹⁷ Headroom is unused generation, that could be used to provide reserve or response, which is sterilised by an active constraint.

- the cost of reduced headroom
 - the appropriate allocation of any contract costs.
- Prices are calculated manually based on a published methodology. Compliance with the methodology may be subject to independent audit.
- The methodology will be part of the licence obligation under the charging methodology i.e. subject to the same objectives and wider transmission licence requirements, including:
 - Facilitating competition
 - Reflect costs incurred
 - Taking account of change to the transmission businesses
 - Not unduly discriminating between a class or classes of users
- The methodology will produce tariffs for each zone.
- Entry zones will be established through a new licence methodology.
- The overrun price will have a half hour resolution.
- The settlement process / timing would be agreed in the assessment phase, for discussion:
 - Receive metered information from IO14 after five days
 - Calculate Entry Overrun charges and post indicative charges at D+7 (or alternative)
 - 28 day settlement
- It is envisaged that Entry Overrun revenues will be included within BSUoS and may be positive or negative.

Other models could include:

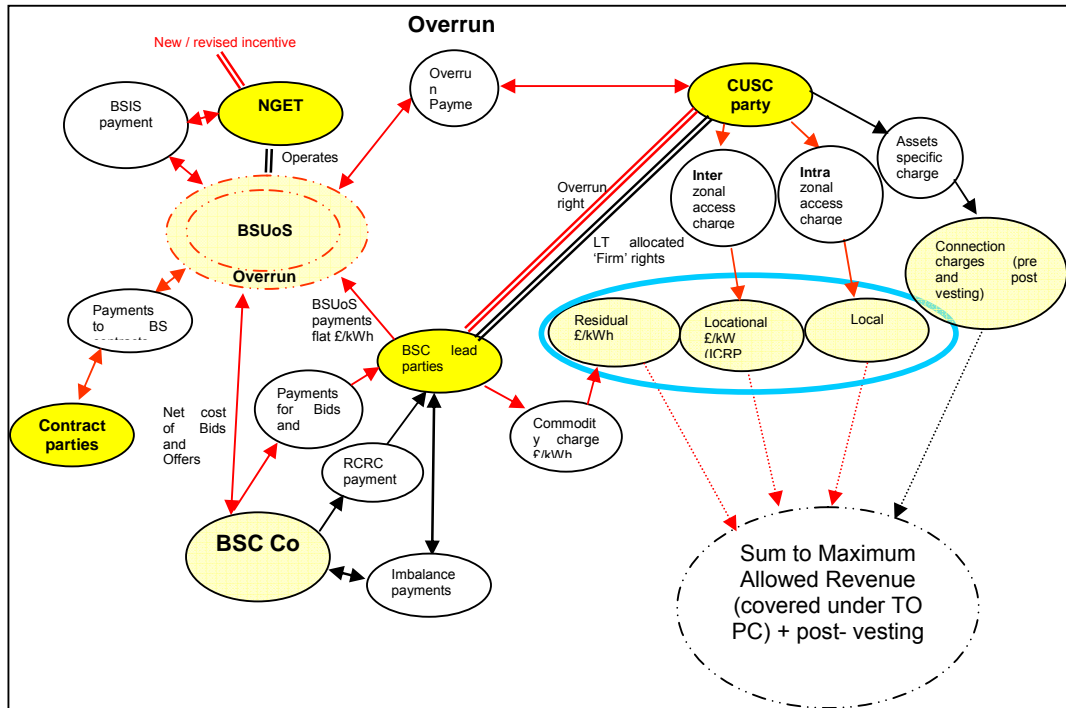
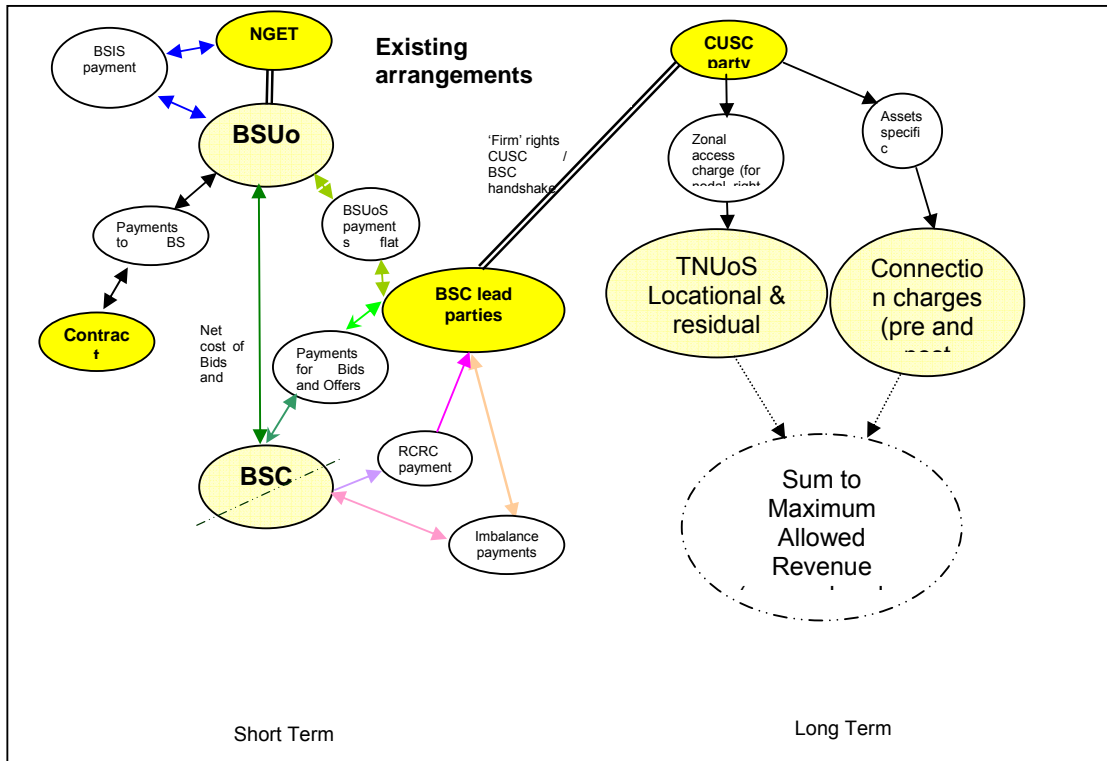
- Option and issues of providing more prompt price reporting.
- Other pricing mechanisms, including:
 - A simple price e.g. multiple of TNUoS or BSUoS
 - Marginal pricing models

National Grid may carry out a charging pre-consultation on all charging methodologies developed by the working group. Given the time constraints any pre-consultation may be limited to two weeks during the working group process. Further full consultation on a preferred charging model and associated methodology will be complete alongside the formal CUSC consultation.

ANNEX 6 – RESULT OF WORKING GROUP VOTE


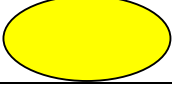
To be inserted after Working Group consultation

Annex 7 Revenue flows



The above two diagrams show the flow of revenue currently ("Existing Arrangements") and as originally proposed ("Overrun") under CAP162. Note that there will be a separate consultation on residual charging and therefore the units of residual charging (i.e. £/kW or £/kWh) have yet to be consulted upon and decided.

Key:

	A revenue fund e.g. BSUoS
	A party e.g. CUSC party

Dashed lines round an oval imply it may contract or expand.

A single line is a money flow. On the 'Existing arrangements' similar colours indicate relationship, on the revised arrangements red indicates a possible change.

A double line is an obligation, right or relationship; red is new or changed.

Dashed line / oval represents 'sum to'.

Existing arrangements

To trade parties must be a CUSC and BSC party (or allied to someone responsible for them in the BSC / CUSC). The CUSC parties have to pay charges associated with accessing the transmission system in accordance with the methodology; these are TNUoS and Connection, which make up MAR. BSC parties pay and get paid in accordance with the BSC.

The charging methodologies also require parties to pay BSUoS charges, these are based on metered output. BSUoS represent the net costs of GBSO actions, including net cost of bids and offers, contracts, trades etc. Any GBSO incentive payment / receipt also flows through BSUoS.

BSC parties pay / get paid for bids and offers, the net difference flows through to BSUoS, representing the cost of balancing and securing the electrical system. BSC parties also pay imbalance charges, with the net difference being redistributed through RCRC back to BSC parties. These two distinctly separate revenue flows are shown separate in the BSC by a dashed line.

Generic short term changes

The TNUoS methodology separates out 'Local' and 'Residual' elements of the transmission charge (associated with accessing the transmission system) to ensure that not only firm transmission access holders pay for the Residual and to ensure local charges are dealt with more effectively. This also recognises that as plant margins increase there will be a greater variance of load factors. As discussed at Working Group 3 all parties should contribute to the residual element of TNUoS. Parties who hold firm transmission access rights pay the Locational charge – based on their firm access capacity (MW) holding. All parties pay the local charge in accordance with the local changing arrangements. Connection charges are not expected to change.

A change to the basis of the Residual charge from kW to kWh could result in a switch to the CUSC party being charged, noting TNUoS and BSUoS may be paid by different parties. This potential change is shown but is subject to industry consultation following Working Group 3 discussions. Any change is only required where the charge is kWh based. A switch between CUSC parties may be the case for Interconnectors and CUSC 6.29 parties, although rules in the methodology could avoid any switch.

The MAR+ post vesting connection revenue will change if more parties connect, although this would happen eventually anyway. The difference between the total change in MAR+ and net revenue recovered through Local and Connection charges is reconciled through the Residual. If parties switch from Long-Term to Short-Term transmission access then the amount to be collected through the Locational element potentially reduces (assuming only exporting zones). However, a reduction in the

amount recovered through the Locational element will increase the amount to be recovered through the Residual element of the transmission charge.

Overrun

In the case of Overrun CUSC parties can exceed their firm transmission access holding. This will attract an Overrun charge, paid by the generator to the GBSO based on the Overrun charging methodology.

The consequence of a party overrunning is expected to be a change in the cost of running the transmission system, normally dealt with through BSUoS. In exporting areas this would be an increase, in negative zones this may be a decrease (in the cost over what the GBSO would have had to have taken without overrun). The general assumption is that parties in negative zones would opt for firm transmission access, in order to secure relatively firm income from the Locational element of the transmission charge.

The difference between the sum of Overrun receipts and the change in GBSO operating costs due to Overrun appears in BSUoS. This change may be positive or negative so may increase or decrease BSUoS payments paid by all CUSC parties. The choice of the methodology will influence how large this change will be, although in any of the proposals it could be positive or negative. All proposals other than the marginal proposal are intended to leave overall net BSUoS charges unchanged.

It should be noted that under this proposal where parties who overrun are exposed to the cost they cause so that other parties are held whole result in the overall split of BSUoS changing. The split of the revised BSUoS revenue (BSUoS revenue without overrun + additional payments due to overrun) will become more weighted toward generation by the percentage incurred in overrun. For example, if Overrun doubled the cost of BSUoS, the split of BSUoS would be change from 50:50 (G:D) currently to 25:75 (G:D).

Within the fixed ex-ante option there is the opportunity for a user to arbitrage, knowing the cost of Overrun before it Overruns and placing appropriate bid prices. Within the average pricing methodology all Users share the cost of Overrun, therefore potentially undermining the need to purchase longer term transmission access rights (an individual User only ever sees the average cost although efficient transmission investment is carried out against the total cost). Under the marginal methodology the tariff will be derived from the differential marginal bid and offer prices, so may under or over recover, depending on the exact disposition of overrunning generation. The delta revenue would be circulated back to all Users through BSUoS costs.

For example, if a large Generator in Scotland switched to overrun:

The TNUoS for all other generation in the north would reduce, reflecting the Long-Term commitment for transmission access, and freeing up access for new entrants. This assumes that potential Overrunning parties (those with a connection but no TEC) are not modelled in the TNUoS tariff model. However it may potentially be exposed to higher total overrun charges if it ran when the system was constrained.

ANNEX 8 ILLUSTRATION OF OVERRUN PAYMENT

