

Issue	Revision
0.3B	Informal Consultation DRAFT

# **The Entry Capacity Substitution Methodology Statement**

**Effective from [1<sup>st</sup> March 2010] (in respect  
of QSEC auctions)**

**Mechanical Approach**

**INCREMENTAL ENTRY CAPACITY RELEASE STATEMENT****Document Revision History**

<b>Version/ Revision Number</b>	<b>Date of Issue</b>	<b>Notes</b>
0.1	17 May 2007	Draft for consultation
0.2	4 July 2008	Revised draft updated following Substitution Workshops. Issued as a discussion document.
0.3	15 May 2009	Informal consultation Major changes to reflect workshop output.
0.3B	15 May 2009	<a href="#">Drafted for Mechanical Approach.</a>

## ABOUT THIS DOCUMENT

This document describes the methodology that National Grid Gas plc (“National Grid”) in its role as holder of the Gas Transporter Licence in respect of the NTS (“the Licence”) will utilise when considering the substitution of NTS entry capacity from one NTS Aggregate System Entry Point “ASEP” to another ASEP where demand for entry capacity exceeds existing allocated quantities. In particular, it defines:

- under what circumstances National Grid will consider such substitutions; and
- the process to be undertaken by National Grid to determine its proposals to substitute capacity or revise baseline quantities.

This document is one of a suite of documents that describe the release of incremental capacity by National Grid and the methodologies behind them. The other documents are available on our website at:

<http://www.nationalgrid.com/uk/Gas/Charges/statements/>

This statement applies from [1 March 2010].

This document has been published by National Grid in accordance with Special Condition C8D of the Licence. National Grid believes the content is consistent with its duties under the Gas Act and is consistent with the Standard Conditions, Standard Special Conditions and Special Conditions of the Licence.

It should be noted that this document does not provide the methodology by which, and from when, incremental entry capacity will be made available. This methodology can be found in the Incremental Entry Capacity Release Methodology Statement (“IECR”).

This statement of the Entry Capacity Substitution Methodology (“ECS”) is effective from [1<sup>st</sup> March 2010] in respect of incremental obligated entry capacity, released as a result of valid bids made in the auctions for Long Term System Entry capacity (the “QSEC auctions”). The timing of the release of any incremental obligated entry capacity made available as a result of entry capacity substitution will be in accordance with the IECR.

If you require further details about any of the information contained within this document or have comments on how this document might be improved please contact our NTS Gas Charging and Access Development team on **01926 656217** or at: [box.transmissioncapacityandcharging@uk.ngrid.com](mailto:box.transmissioncapacityandcharging@uk.ngrid.com) or at:

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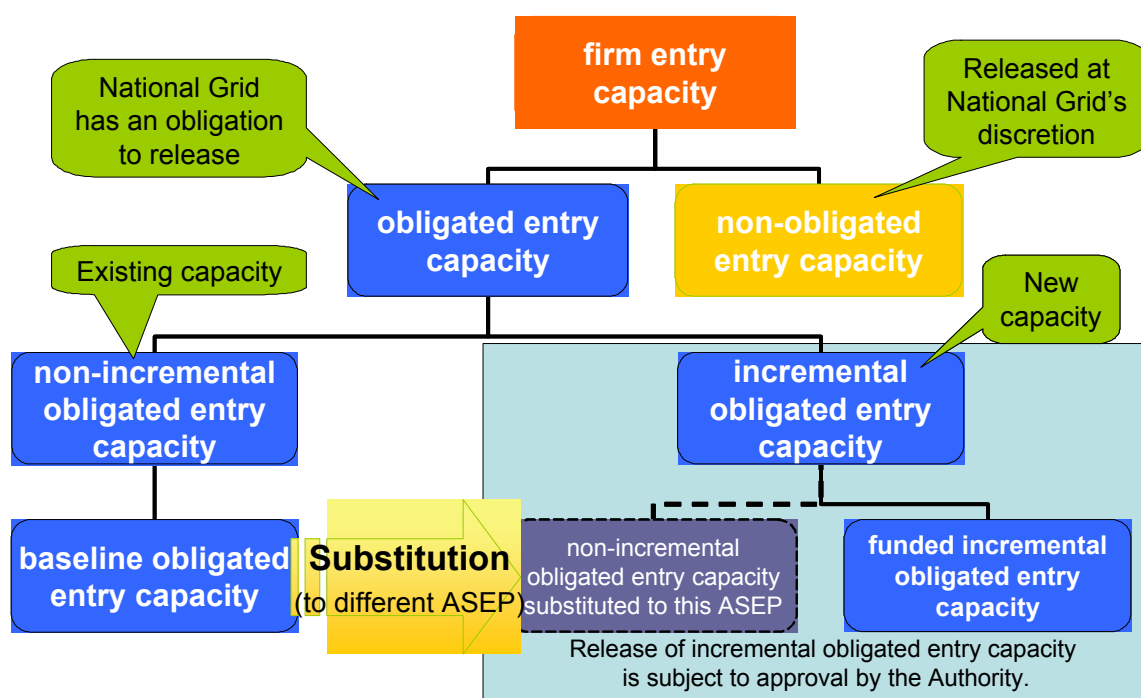
## GENERAL INTRODUCTION

### Background

1. National Grid is the owner and the operator of the gas National Transmission System (NTS) in Great Britain.
2. The NTS plays an important role in facilitating the competitive gas market and helping to provide the UK with a secure gas supply. It is a network of pipelines, presently operated at pressures of up to 94 barg, which transports gas safely and efficiently from coastal terminals and storage facilities to exit points from the system. Exit points are predominantly connections to Distribution Networks (DNs), but also include storage sites, and direct connections to large industrial consumers and other systems, such as interconnectors to other countries.
3. These operations are carried out to meet the needs of the companies that supply gas to domestic, commercial and industrial consumers and to power stations. In 2007/08 1,050 TWh of gas was transported to these consumers.
4. This publication sets out the methodology that applies for the substitution of existing entry capacity at one or more NTS Entry Points to meet demand for incremental entry capacity at other entry points, (i.e. capacity to be made available above the prevailing level of obligated entry capacity, primarily beyond investment lead times (the unconstrained period) in response to signals received from Users through processes described in the Uniform Network Code), thereby reducing the need for investment to meet that incremental demand for entry capacity. The methodology is applicable in respect of capacity released in the long-term, i.e. in the QSEC auctions.
5. The methodology for moving entry capacity between ASEPs in the short-term can be found in the "Entry Capacity Transfer and Trade Methodology Statement". Related processes have been introduced to the Uniform Network Code ("UNC").
6. Details of National Grid and its activities can be found on its internet site at [www.nationalgrid.com](http://www.nationalgrid.com). An electronic version of this publication, along with the other related statements can be found on the following web page: "<http://www.nationalgrid.com/uk/Gas/Charges/statements/>".

### Capacity Terminology

7. This document contains terminology relating to entry capacity which is used in the Licence for the purposes of distinguishing between National Grid's capacity obligations and revenue treatments. It should be noted that although this terminology exists, it does not change the capacity products that Shippers procure through established UNC processes e.g. Firm NTS Entry Capacity and Interruptible NTS Entry Capacity.
8. The terminology and relationships relating to Firm NTS Entry Capacity are provided below to assist the reader in interpreting this statement.



9. The actual definitions of these terms are contained within the Licence. Where any conflict arises between the Licence and this statement the Licence shall prevail.
10. Entry capacity substitution is therefore, the process of assigning “non-incremental obligated entry capacity” from one or more ASEP to meet the requirement for “incremental obligated entry capacity” elsewhere. The substituted entry capacity is assigned to the ASEP where additional capacity is demanded, in preference to creating additional capacity (“funded incremental obligated entry capacity”) which may require investment in new infrastructure. The “non-incremental obligated entry capacity” at an ASEP is made up of baseline obligated entry capacity for the ASEP plus (or minus) any entry capacity that has been substituted to (or from) the ASEP. In addition, funded incremental obligated entry capacity that has been released in long term auctions from 2007 will be treated as non-incremental obligated entry capacity five years after this capacity is first released.

### National Grid's Licence Obligations

11. New and existing Users of the NTS are able to request to purchase entry capacity products defined in the UNC for any ASEP. Such capacity requests will be considered against the provisions of National Grid's statutory licence obligations and in accordance with its published methodologies.
12. Overriding obligations applicable to this statement are set out in the Gas Act and the Licence.
13. Specific obligations in respect of the release of incremental entry capacity and relevant to this statement are set out in Special Condition C15 of the Licence. Under this condition, National Grid must prepare the Incremental Entry Capacity Release Methodology Statement (the “IECR”) setting out the methodology by which National Grid will determine whether to make incremental entry capacity available for sale. The current IECR can be found on National Grid's website.

14. Specific obligations in respect of the substitution of entry capacity and applicable to this statement are set out in paragraph 10 of Special Condition C8D of the Licence and are:
- To prepare and submit for approval by the Authority a statement setting out the entry capacity substitution methodology which National Grid shall apply for entry capacity substitution.
  - To use reasonable endeavours to substitute entry capacity in accordance with the Entry Capacity Substitution Methodology Statement.
  - To use reasonable endeavours to ensure that the entry capacity substitution methodology facilitates the achievement of the entry capacity substitution objectives which are to:
    - ensure that entry capacity substitution is effected in a manner which minimises the costs associated with funded incremental obligated entry capacity<sup>1</sup>;
    - ensure that entry capacity substitution is effected in a manner which is compatible with the physical capability of the NTS;
    - avoid material increases in the costs (including entry capacity constraint management costs) that are reasonably expected to be incurred by National Grid as a result of substituting entry capacity; and
    - so far as is consistent with the above three points, to facilitate effective competition between relevant shippers and suppliers.
15. Special Condition C8A of the Licence defines entry capacity substitution as “the process by which unsold non-incremental obligated entry capacity is moved from one or more NTS entry points to meet the demand for incremental obligated entry capacity at another NTS entry point”.
16. This document has been produced in compliance with the obligation in paragraph 10(a) of Special Condition C8D and sets out the methodology that National Grid applies for the substitution of unsold non-incremental obligated entry capacity to meet demand for incremental obligated entry capacity at different ASEPs in order to minimise the need for funded incremental obligated entry capacity. The methodology encompasses this obligation and National Grid’s wider obligations to develop and maintain an efficient and economic system.

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<sup>1</sup> National Grid has interpreted the requirement to “minimise” the costs associated with funded incremental obligated entry capacity in this objective as meaning that all available capacity should be substituted to meet the incremental signal, without placing any restrictions on the substitution process.

Consistent with this interpretation National Grid has developed the “Option Approach” and “Two-Stage Auction” as potential substitution methodologies with no restrictions on the quantities available to be substituted other than that for which the Shipper has provided a financial commitment (see draft methodologies v0.3A and v0.3C). An alternative proposal, the “Mechanical Approach” identifies a quantity of entry capacity that will not be made available for substitution even if that capacity includes unsold non-incremental obligated entry capacity. This draft methodology (v0.3B) is based on the Mechanical Approach.

A further development away from the “no restrictions” approach is to have a limit on ASEP to ASEP capacity exchange rates. This is detailed in paragraphs 32 and 33.

## CHAPTER 1: PRINCIPLES

### Purpose of the Methodology Statement

17. This methodology is intended to promote the economic and efficient development of the NTS. For the purposes of this methodology this objective is achieved by seeking to minimise the amount of investment that is required to satisfy incremental demand for entry capacity. Specifically, the methodology describes how capacity could be identified as suitable for substitution from locations where no long term demand (as defined by National Grid's TBE supply forecasts and/or ASEP maximum deliverability) for capacity has been seen to other locations where incremental entry capacity has been demanded through long term auctions.
18. This Entry Capacity Substitution Methodology Statement has been produced to meet the requirements of Special Condition C8D of the Licence in respect of the preparation of a statement setting out the methodology by which National Grid will determine its proposals for the substitution of non-incremental obligated entry capacity. National Grid believes the content is consistent with its duties under the Gas Act and is consistent with the Licence. In making incremental obligated entry capacity available at the recipient ASEP through entry capacity substitution, in a quantity determined in accordance with this methodology the Licence stipulates that the obligation to provide non-incremental obligated entry capacity at the donor ASEP is reduced by that quantity and such substituted capacity will not be available for sale in future auctions.
19. Consistent with the Licence and UNC, NTS Entry Capacity is a firm commercial right that may be offered through daily, monthly or quarterly auctions: it does not reflect a commitment or obligation upon National Grid to undertake any investment on its network, including, but not limited to the provision of a physical connection to the NTS.

## CHAPTER 2: METHODOLOGY

### Introduction

20. This section explains the step by step approach that National Grid will undertake in order to assess the ability of the NTS to accommodate requests for incremental entry capacity at individual ASEPs through the substitution of NTS Entry Capacity across ASEPs so as to minimise the need for investment in the NTS.
21. Before application of the methodology the following conditions are required to be satisfied;
- a. Demand for incremental capacity has satisfied the tests for release of incremental obligated entry capacity as set out in the IECR.
  - b. Capacity that has previously been substituted will be available for substitution where future quantities of that capacity are unsold.
  - c. Any incremental obligated entry capacity released as a result of QSEC auctions held prior to 2007 will not be available for substitution whether or not it has been sold for the period being assessed as such capacity does not become non-incremental obligated entry capacity for the purposes of capacity release obligations.
  - d. Any funded incremental obligated entry capacity released as a result of QSEC auctions held from 2007 onwards will only be available for substitution after a period of five years has elapsed from the initial release date (when it is classed as non-incremental obligated entry capacity for the purposes of capacity release obligations). Where incremental obligated entry capacity release is profiled, this will apply to each tranche of capacity. No reserve amount is held back for shorter term auctions for this type of capacity.
  - e. Capacity sold in previous QSEC auctions will be assumed to have been allocated as baseline obligated entry capacity first, followed by incremental entry capacity (in accordance with the Licence requirements for determining revenues from auctions). This means that capacity available for substitution at ASEPs where incremental capacity signals have previously been seen is likely to be limited (for at least the first five years from the initial release date).
  - f. Capacity that is not offered for release in the QSEC auctions, i.e. capacity that is held-back for MSEC auctions, will not be available for substitution between entry points<sup>2</sup>. Currently this is 10% of baseline obligated entry capacity at each ASEP.
22. Following each QSEC auction demand for incremental obligated entry capacity will be identified. If incremental obligated entry capacity is not released then no further action need be taken.

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<sup>2</sup> This condition limits the capacity available for substitution to 90% of the initial baseline quantity (10% being held back for MSEC auctions) plus or minus any quantities identified in sub-paragraphs b and d and minus any capacity sold. [The Mechanical Approach has been developed to place an additional restriction on the availability of capacity for substitution. National Grid has put forward, in paragraph 34, a different option for decreasing the amount of capacity available for substitution based on identifying a quantity \(GWh/day\) of capacity that will not be available for substitution from each ASEP.](#)

23. If, in accordance with the IECR, National Grid considers that it is appropriate to release incremental obligated entry capacity then this methodology shall apply.
24. In respect of any QSEC auction, capacity will only be considered available for substitution after all qualifying bids for existing capacity have been satisfied, i.e. capacity will be allocated at the ASEP where bids are placed before being substituted to another ASEP.
25. Capacity will only be available to be substituted from an ASEP in the quantity determined in accordance with paragraph 34.

### Application of Zones

26. Where ASEPs utilise common sections of NTS infrastructure and consequently are deemed to be 'interactive' in terms of utilising network capability National Grid will group the ASEPs into zones.
27. The zones and the ASEPs that are included in each are provided as Appendix 1 to this methodology statement. Prior to each QSEC auction National Grid will publish any revisions to the zones.
28. All within zone substitutions shall be progressed before across zone assessments.

### Recipient ASEPs

29. Where the QSEC auction results in National Grid proposing the release of incremental obligated entry capacity at more than one ASEP analysis of substitution opportunities will commence by considering the recipient ASEP with the lowest Licence Revenue Driver ("LRD") for the incremental capacity to be released (as defined in the Licence Special Condition C8D paragraph 2c).
30. The substitution analysis will be assessed in accordance with the physical capability of the recipient ASEP local infrastructure. For example, where physical limits exist on the maximum flows that may be achieved from an entry point, no substitution that could take flows above this physical maximum will be allowed.

### Donor ASEPs

31. Substitutions from donor ASEPs will commence by reducing the capacity at all ASEPs in the same zone as the recipient ASEP. This will be in equal proportion to the available capacity. Where aggregate substitutions are rejected donor ASEPs will be considered individually on the basis of the most favourable ASEP that has spare capacity. The most favourable ASEP will be the nearest ASEP determined according to pipeline distance, all within zone ASEPs will be considered before outside zone ASEPs, and is selected in preference to more distant ASEPs as this will create greatest interchangeability.

32. [All substitutions shall be subject to a limit on the exchange rate<sup>3</sup>. The exchange rate cap shall be [x:1]. This means that where analysis shows that more than x units of capacity are required to create 1 unit at the recipient ASEP then the substitution shall be rejected].
33. [The exchange rate cap shall be applied to each step; i.e.
- within zone assessments of all zones in aggregate;
  - within zone assessments for each individual donor ASEP (this will not be applied where aggregate substitutions are accepted); and
  - out of zone assessments for each individual donor ASEP].

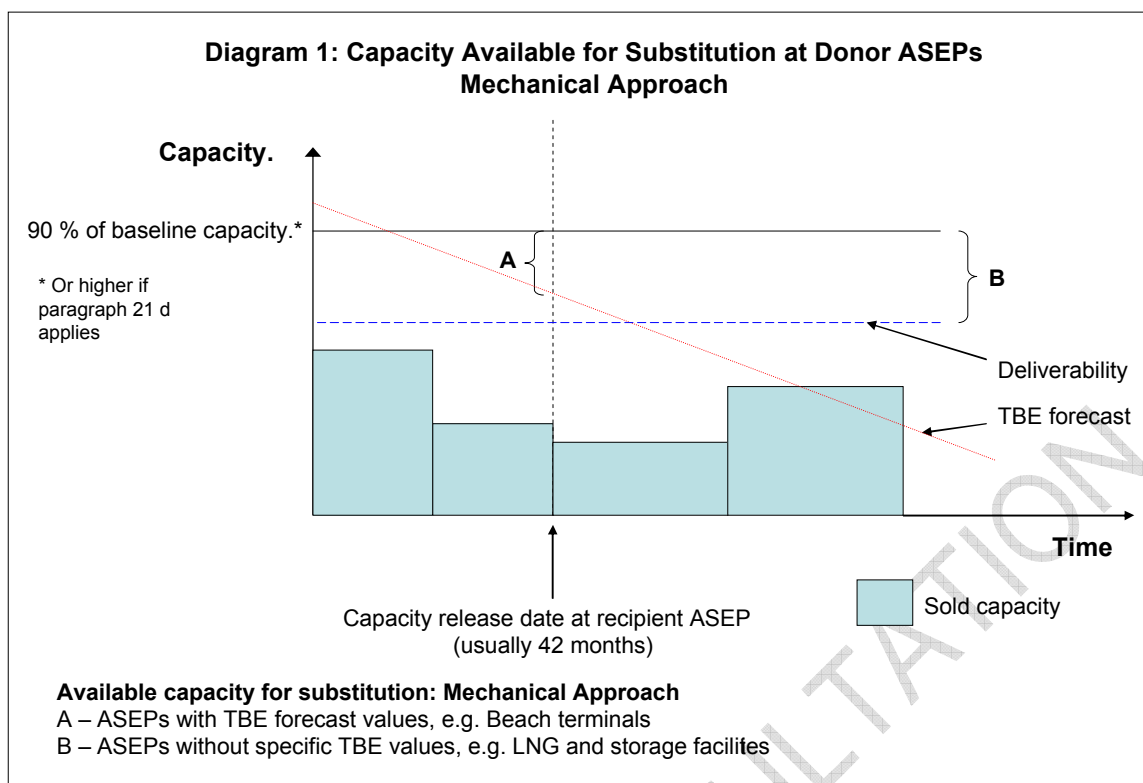
### Capacity Available for Substitution

34. The quantity of capacity made available for potential substitution from each donor ASEP shall be limited. The available quantity shall be defined as the lowest quantity, for any quarter from the date for which incremental capacity has been identified for release at the recipient ASEP, determined as:
1. 90% of the baseline obligated entry capacity;
  2. plus any previous released incremental capacity that has been reclassified as non-incremental obligated entry capacity;
  3. plus any capacity that has been substituted to the ASEP;
  4. minus any capacity that has been substituted from the ASEP;
  5. minus the greater of
    - any capacity that has been allocated to any User; and
    - a quantity equal to the peak forecast level stated in National Grid's latest Ten Year Statement; or
    - in respect of storage facilities and LNG importation terminals not incorporated in other ASEPs covered above, the peak deliverability of the ASEP.

This is illustrated in diagram 1 below.

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<sup>3</sup> The potential application of an exchange rate cap is an issue which remains to be decided. If an exchange rate cap is employed, the level of the cap also needs to be determined. These are key questions raised in the May 09 informal consultation. If an exchange rate cap is not employed the methodology shall be amended by deletion of relevant sections, including paragraphs 32, 33, 41, and 44 and part of paragraphs 40 and 44.



### Substitution Analysis (see Diagram 2)

35. Where an incremental signal has been received analysis is undertaken to determine what capacity exchange would be required to satisfy the incremental capacity request without the need for investment. Capacity substitution will be determined by assessing the flow patterns that can be accommodated by the NTS; i.e. without increasing the risk of capacity constraint management actions being required.
36. Capacity substitution will firstly be considered within the relevant entry zone. If this cannot satisfy the increment at the recipient ASEP then substitutions out-with the relevant entry zone will be considered.
37. Substitution analysis will commence by increasing the flow (in the assessment scenario) at the recipient ASEP to the prevailing obligated entry capacity.
38. Flow will be reduced at the least interactive ASEP to maintain a supply / demand balance.
39. Substitution analysis will continue by increasing the flow (in the assessment scenario) at the recipient ASEP by the level of the incremental obligated entry capacity.
40. The obligated capacity will be reduced at all within zone donor ASEPs by, in aggregate, the incremental quantity at the recipient ASEP. Where the available capacity at the within zone donor ASEPs is less than the incremental capacity then further out of zone donor ASEPs will be used (paragraph 43). Where this impacts on flow rebalancing will be undertaken at the least interactive ASEPs. [The within zone exchange rate will be determined].
41. [Where the within zone exchange rate exceeds the exchange rate cap the process will recommence with individual within zone donor ASEPs considered in sequence.

- Each donor ASEP exchange rate will be determined. Where the exchange rate cap is exceeded substitution from that donor ASEP will not take place. Subject to paragraph 42 the process will move to the next recipient ASEP.]
42. [National Grid may, at its discretion, consider further donor ASEPs. As ASEPs are considered in order of interactivity with the recipient ASEP it is unlikely that any subsequent donor ASEPs will satisfy the exchange rate cap. ]
43. The obligated capacity at donor ASEPs will progressively be reduced until either:
- the incremental request is satisfied; or
  - all available capacity for substitution (see paragraph 34) has been substituted.
- In this case the process will move to the assessment of potential substitutions across zones.
44. After all within zone assessments have been completed, i.e. as defined by paragraph 43, any unsatisfied incremental requests will be considered with donor ASEPs from alternative zones. Donor ASEPs will be considered in order of pipeline distance from the recipient ASEP (nearest first). [Each donor ASEP exchange rate will be determined. Where the exchange rate cap is exceeded substitution from that donor ASEP will not take place. Subject to paragraph 42 the process will move to the next recipient ASEP.]
45. The obligations (and hence flows) for all potential capacity substitutions shall be verified by network analysis. Where such analysis is deemed to result in a “failed” network, the flow at the donor ASEP(s) (and hence the quantity of capacity substituted from the donor ASEP(s)) shall be adjusted until the network does not fail or there is no more capacity available to substitute. Where there is no more capacity available the incremental obligated entry capacity shall be met solely by funded incremental obligated entry capacity; i.e. part-substitution, part-investment<sup>4</sup> solutions will not be considered.
46. The appropriate level and combinations of substitution and investment (considering all potential incremental capacity releases) will be confirmed by network analysis. This will be achieved by updating the network model for the revised, post-substitution, obligated capacity levels and identified investment. The final step in the substitution analysis shall then be reversed, by 2mcmd, (i.e. by increasing the obligated capacity (where this impacts on flow rebalancing will be undertaken) at the final donor ASEP) and this shall be validated through network analysis.
- If the network fails, e.g. network pressures or plant operating conditions cannot be maintained then the proposed substitution is deemed to be appropriate.
  - If the network passes further 2 mcmd increments shall be added to the donor ASEP flow until the network fails and the cut-off point is identified.

### Network Analysis for Capacity Substitution

47. Potential capacity substitutions shall be validated through network analysis. The objective shall be to avoid incremental change in risk. Hence National Grid will not propose capacity substitution where this results, under planning scenarios, in the capability of the NTS being reduced below that required.
48. The capacity substitution objective is to minimise investment that would otherwise be required to satisfy demand for incremental capacity. Substitution opportunities shall

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<sup>4</sup> National Grid may consider alternatives to investment.

be assessed against criteria defined within the Transmission Planning Code which is the basis for National Grid's investment decisions. This shall include existing commitments, including capacities and pressures, on the network. Substitutions shall not be accepted if this puts at risk National Grid's ability to deliver its existing commitments. These commitments will be taken from regulatory and commercial agreements and statutory instruments and are additional to the conditions set out in the National Grid annual planning procedures.

49. The supply and demand scenarios used for the analysis will be consistent with the Transmission Planning Code.
50. The analysis shall primarily be undertaken at the peak 1 in 20 demand level supplemented by analysis for different demand conditions derived from the average load duration curve and be undertaken for a number of gas years starting with the proposed gas year for release of the incremental obligated entry capacity.

### Analysis Output

51. On completion of the above analysis the following effects of the accepted capacity substitutions will be recorded and proposed to Ofgem:
  - the quantity of incremental obligated entry capacity proposed for release at any ASEP where National Grid has identified, consistent with the IECR, demand for incremental entry capacity; and the quantity of such incremental obligated entry capacity to be met by;
    - substitution of non-incremental obligated entry capacity; and
    - funded incremental obligated entry capacity, e.g. by investment;
  - the reduced level of obligated entry capacity available for release in future auctions at donor ASEPs.
52. The incremental obligated entry capacity proposal will be implemented subject to the Authority not vetoing (or directing to modify) the proposal in accordance with Special Condition C8D of the Licence. In the event that the proposal is vetoed or agreement is not reached on any modification National Grid will not allocate incremental obligated entry capacity and the adjustments proposed in paragraph 51 will not be made.

### New ASEPs

53. In accordance with UNC rules, where a new ASEP is created a stand-alone auction can be held for that new ASEP only. Analysis of the bids placed in these auctions may trigger the release of incremental entry capacity. Where this occurs substitution will be considered to meet the requirement for the incremental entry capacity before investment.
54. As a transitional rule, substitution will not be considered in respect of "new ASEP specific auctions" where these auctions occur after implementation of this methodology and before a regular QSEC auction where capacity can be obtained at all ASEPs.

## Appendix 1. Entry Capacity Zones

The current ASEPs that constitute each Entry Zone are provided below. There are seven zones.

<b>Zone</b>	<b>ASEP</b>
Easington Zone	Easington terminals (inc Rough) Hornsea Garton / Aldborough Hatfield Moor
Theddlethorpe Zone	Theddlethorpe
South East Zone	Bacton terminals (inc. Continental Interconnector) Grain LNG
Northern Triangle	Barrow terminals Teesside terminals St Fergus terminals Glenmavis
North West Corridor	Fleetwood Partington Burton Point Hole House Farm Byley / Cheshire
West UK Zone	Milford Haven Dynevor Arms
South West UK Zone	Humbley Grove Avonmouth

Diagram 2 – Process for Substitution Analysis

Mechanical Approach with Exchange Rate Cap

