









CUSC Final Modification Report		At what stage is this document in the process?								
<h1>CMP301: Clarification on the treatment of project costs associated with HVDC and subsea circuits</h1>		<table border="1"> <tr> <td>01</td> <td>Initial Written Assessment</td> </tr> <tr> <td>02</td> <td>Code Administrator Consultation</td> </tr> <tr> <td>03</td> <td>Draft CUSC Modification Report</td> </tr> <tr> <td>04</td> <td>Final CUSC Modification Report</td> </tr> </table>	01	Initial Written Assessment	02	Code Administrator Consultation	03	Draft CUSC Modification Report	04	Final CUSC Modification Report
01	Initial Written Assessment									
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03	Draft CUSC Modification Report									
04	Final CUSC Modification Report									
<p><b>Purpose of Modification:</b> CMP213 introduced specific expansion factors for HVDC and subsea circuits however the existing legal text is open to interpretation – this proposal would cement the interpretation made by The Company to ensure consistency with onshore circuits</p>										
	<p>This Final Modification Report has been prepared in accordance with the terms of the CUSC. An electronic version of this document and all other CMP301 related documentation can be found on the National Grid website via the following link:  <a href="https://www.nationalgrid.com/uk/electricity/codes/connection-and-use-system-code-cusc/modifications/clarification-treatment">https://www.nationalgrid.com/uk/electricity/codes/connection-and-use-system-code-cusc/modifications/clarification-treatment</a></p> <p>At the CUSC Panel meeting on the 27 July 2018, the Panel members unanimously agreed that the Original was better than the baseline and recommend that it should be implemented</p> <p>The purpose of this document is to assist the Authority in making its determination on whether to implement CMP301.</p>									
	<p><b>Low Impact:</b> CUSC Parties who are subject to TNUoS charges</p>									

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Timetable		 <b>Any questions?</b> Contact: <b>Shazia Akhtar</b>  <b>shazia.akhtar2@nationalgrid.com</b>  <b>07787266972</b> <b>Proposer:</b> <b>Harriet Harmon,</b> <b>National Grid</b>  <b>harriet.harmon@nationalgrid.com</b>  <b>07970458456</b> <b>National Grid Representative:</b> <b>Harriet Harmon</b>
<b>The Code Administrator recommends the following timetable:</b>		
Draft Final Modification Report presented to Panel		24 July 2018
Modification Panel decision		27 July 2018
Final Modification Report issued to Authority		08 August 2018
Indicative Decision Date		13 September 2018
Decision implemented in CUSC		01 April 2019

## 1 About this document

CMP301 was proposed by National Grid and was submitted to the CUSC Modifications Panel for its consideration on 29 June 2018. The Panel decided to send the Proposal to a Code Administrator Consultation.

In terms of the aims of CMP301, CMP213 introduced specific expansion factors for HVDC and subsea circuits however the existing legal text is open to interpretation – this proposal would cement the interpretation made by The Company to ensure consistency with onshore circuits.

### **Code Administrator Consultation Responses**

3 responses were received to the Code Administrator Consultation. A summary of the responses can be found in Section 6 of this document. All respondents agreed that the proposal better facilitates the applicable CUSC objectives.

### **CUSC Panel View**

At the CUSC Panel meeting on the 27 July 2018, the Panel voted on CMP301 against the applicable CUSC objectives.

The Panel members unanimously agreed that the Original was better than the baseline and recommend that it should be implemented

This Final Modification Report has been prepared in accordance with the terms of the CUSC. An electronic copy can be found on the National Grid Website:

<https://www.nationalgrid.com/uk/electricity/codes/connection-and-use-system-code-cusc/modifications/clarification-treatment>

### Defect

The CUSC currently includes, in its consideration of expansion factors, different elements depending on whether the circuit is subsea, HVDC, onshore or offshore. The differing costs mean that AC subsea and HVDC circuits are not treated consistently with onshore circuits, to which they are most similar.

### What

Currently the CUSC states:

- 14.15.75 AC sub-sea cable and HVDC circuit expansion factors are calculated on a case by case basis using actual project costs (Specific Circuit Expansion Factors).
- 14.15.76 For HVDC circuit expansion factors both the cost of the converters and the cost of the cable are included in the calculation.
- 14.15.80 Offshore expansion factors (£/MWkm) are derived from information provided by Offshore Transmission Owners for each offshore circuit. Offshore expansion factors are Offshore Transmission Owner and circuit specific. Each Offshore Transmission Owner will periodically provide, via the STC, information to derive an annual circuit revenue requirement. The offshore circuit revenue shall include revenues associated with the Offshore Transmission Owner's reactive compensation equipment, harmonic filtering equipment, asset spares and HVDC converter stations.

We propose to alter 14.15.76 such that it is clear that the elements listed in 14.15.80 as being included in the offshore circuit revenue are not included in the expansion factors for HVDC or AC subsea circuits.

### Why

We believe that the existing wording is open to interpretation and does not provide appropriate clarity to Users in relation to the calculation of expansion factors. We further consider it appropriate to align the treatment of expansion factors for HVDC and AC subsea circuits to that of onshore circuits, on the basis that these circuits connect to onshore rather than offshore assets.

### How

A legal text change to S14 to illustrate the limit of the components used in the expansion factor calculation.

### 3 Proposer's solution

- 14.15.75 AC sub-sea cable and HVDC circuit expansion factors are calculated on a case by case basis using actual project costs (Specific Circuit Expansion Factors).
- 14.15.76 For HVDC circuit expansion factors both the cost of the converters and the cost of the cable are included in the calculation.
- 14.15.80 Offshore expansion factors (£/MWkm) are derived from information provided by Offshore Transmission Owners for each offshore circuit. Offshore expansion factors are Offshore Transmission Owner and circuit specific. Each Offshore Transmission Owner will periodically provide, via the STC, information to derive an annual circuit revenue requirement. The offshore circuit revenue shall include revenues associated with the Offshore Transmission Owner's reactive compensation equipment, harmonic filtering equipment, asset spares and HVDC converter stations.

We propose to alter 14.15.76 such that it is clear that the elements listed in 14.15.80 as being included in the offshore circuit revenue are not included in the expansion factors for HVDC or AC subsea circuits.

Legal text drafting is appended to this Proposal form.

No cross-code implications are foreseen by the Proposer, nor do we consider there to be any risks to any existing pieces of work, including the Targeted Charging Review.

#### **Does this modification impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?**

Whilst this Proposal relates to the locational signal, which is being considered under the Access & Forward-Looking Charges work stream in Ofgem's TCR, we do not believe that this change directly affects or inhibits any development in that area.

#### **Consumer Impacts**

We do not anticipate any direct consumer impacts to demand TNUoS as a result of this modification; there will be a reallocation of costs among generators.

## 4 CMP301: Relevant Objectives

Impact of the modification on the Applicable CUSC Objectives (Charging):	
Relevant Objective	Identified impact
(a) That compliance with the use of system charging methodology facilitates effective competition in the generation and supply of electricity and (so far as is consistent therewith) facilitates competition in the sale, distribution and purchase of electricity;	Positive – a level playing field in terms of knowledge & understanding of the components of expansion factors supports competition
(b) That compliance with the use of system charging methodology results in charges which reflect, as far as is reasonably practicable, the costs (excluding any payments between transmission licensees which are made under and accordance with the STC) incurred by transmission licensees in their transmission businesses and which are compatible with standard licence condition C26 requirements of a connect and manage connection);	None
(c) That, so far as is consistent with sub-paragraphs (a) and (b), the use of system charging methodology, as far as is reasonably practicable, properly takes account of the developments in transmission licensees' transmission businesses;	None
(d) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency. These are defined within the National Grid Electricity Transmission plc Licence under Standard Condition C10, paragraph 1*; and	None
(e) Promoting efficiency in the implementation and administration of the CUSC arrangements.	None
*Objective (d) refers specifically to European Regulation 2009/714/EC. Reference to the Agency is to the Agency for the Cooperation of Energy Regulators (ACER).	

## 5 Implementation

Should be on 1 April 2019

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## 6 Code Administrator Consultation Response Summary

The Code Administrator Consultation was issued on 02 July 2018 for 15 Working Days and closed 23 July 2018.

3 responses were received to the Code Administrator Consultation and are detailed in the table below

Respondent	Do you believe that CMP301 better facilitates the Applicable CUSC objectives?	Do you support the proposed implementation approach?	Do you have any other comments?
Simon Swiatek, Forsa Energy	<p>Yes.</p> <p>We would agree that the present wording in the CUSC is open to interpretation.</p> <p>We believe that the proposed text provides clarification on what specific costs shall be included in the HVDC and AC subsea circuit expansion factors.</p> <p>Our view is that this modification will facilitate in achieving the relevant CUSC objectives. The revised wording will align the treatment of expansion factors for HVDC and AC subsea circuits with that used for onshore circuits.</p> <p>We consider that competition will be supported by this modification. The modification will ensure consistency with treatment of onshore circuits.</p>	Yes	No
Guy Nicholson, Element Power	<p>We agree that the proposed modification provides clarity on an existing policy and should be welcomed by the industry as a whole.</p> <p>We understand that the Expansion Factor (£/MW·km) is intended to include only those factors which are dependent on both power and distance (such as ac overhead lines, ac underground cables and associated switchgear), and as such reactive compensation equipment, harmonic filtering equipment and asset spares (where these asset spares are related to the reactive</p>	Yes	No

	<p>compensation equipment, harmonic filtering etc.) should not be included in the Expansion Factor.</p> <p>This change supports applicable CUSC objectives a) because it creates a more level playing field between different technologies and different users and c) because it addresses the practical and detailed aspects of the recent and new developments of HVDC assets in the GB onshore transmission network and e) because it reduces ambiguity in the CUSC.</p>		
<p>Paul Mott, EDF Energy</p>	<p>Yes. The existing wording in the CUSC about to the calculation of expansion factors is open to interpretation, lacking clarity. The best way to add clarity is to state clearly that the calculation of expansion factors for HVDC and AC subsea circuits connecting onshore (even if on-island) assets, should be comparable to other onshore local circuits. The proposed legal text achieves this, and if implemented, the mod would better facilitate CUSC charging objective (a), supporting competition, by creating a clear and level playing field in terms of the components of local circuit expansion factors for different transmission circuit technologies. The effect is also positive against CUSC charging objective (c), properly taking account of the developments in transmission licensees' transmission businesses (HVDC transmission circuits haven't existed before in Britain, nor have high capacity AC transmission circuits to islands); and the mod would have a positive effect against CUSC charging objective (e), promoting efficiency in the implementation and administration of the CUSC arrangements (as ambiguity is not efficient, and cannot be readily administered by way of charge calculation).</p>	<p>Yes, relevant circuits don't exist yet.</p>	<p>No</p>



## 7 CUSC Panel Views

At the CUSC Panel meeting on 27 July 2018, the Panel voted on CMP301 against the Applicable CUSC Charging Objectives.

The Panel members unanimously agreed that the Original Proposal was better than the baseline and recommended that it should be implemented.

For reference the Applicable CUSC Charging Objectives are;

(a) That compliance with the use of system charging methodology facilitates effective competition in the generation and supply of electricity and (so far as is consistent therewith) facilitates competition in the sale, distribution and purchase of electricity;

(b) That compliance with the use of system charging methodology results in charges which reflect, as far as is reasonably practicable, the costs (excluding any payments between transmission licensees which are made under and accordance with the STC) incurred by transmission licensees in their transmission businesses and which are compatible with standard license condition C26 requirements of a connect and manage connection);

(c) That, so far as is consistent with sub-paragraphs (a) and (b), the use of system charging methodology, as far as is reasonably practicable, properly takes account of the developments in transmission licensees' transmission businesses;

(d) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency. These are defined within the National Grid Electricity Transmission plc. License under Standard Condition C10, paragraph 1; and

(e) Promoting efficiency in the implementation and administration of the system charging methodology.

**Vote 1: Does the original facilitate the objectives better than the Baseline?**

Panel Member	Better facilitates ACO (a)	Better facilitates ACO (b)?	Better facilitates ACO (c)?	Better facilitates ACO (d)?	Better facilitates ACO (e)?	Overall (Y/N)
James Anderson						
Original	Yes	Neutral	Neutral	Neutral	Yes	Yes
<p><b>Voting Statement:</b></p> <p>CMP301 improves clarity in the calculation of expansion factors and comparability between onshore and offshore circuits thus better facilitating competition (Applicable Charging Objective(a)).</p> <p>Improving clarity in the charging arrangements should reduce uncertainty in the calculation of TNUoS charges thus promoting greater efficiency in the implementation of the CUSC arrangements (Applicable Charging Objective (e)).</p> <p>CMP301 is neutral against the other Applicable Charging Objectives and overall better meets those Objectives.</p>						

Andy Pace						
Original	Neutral	Neutral	Neutral	Neutral	Yes	Yes
<p><b>Voting Statement:</b></p> <p>CMP301 improves transparency in the calculation of expansion factors by implementing into the CUSC the current working practice for how these elements are calculated. This change therefore better meets charging objective (e) by promoting greater efficiency in the implementation of the CUSC arrangements. CMP301 is neutral against the other Applicable Charging Objectives and overall better meets those Objectives.</p>						
Laurence Barrett						
Original	Neutral	Neutral	Neutral	Neutral	Yes	Yes
<p><b>Voting Statement:</b></p> <p>It is my understanding that CMP301 simply clarifies how NG currently calculates the expansion factors that are used for AC sub-sea cables and HDVC lines, it does not propose to change how this calculation is done. Therefore, there should be no resulting commercial impact as the tariffs that are calculated using the expansion factors will not change. The Original proposal will therefore better meet CUSC Charging Objective (e) by improving the efficiency and administration of the system charging methodology. It will be neutral against the other objectives and overall will be better than the baseline against the CUSC Charging Objectives.</p>						
Garth Graham						
Original	Yes	Neutral	Yes	Neutral	Yes	Yes
<p><b>Voting Statement:</b></p> <p>Having reviewed the responses to the Code Administrator Consultation and the Modification Report it is clear that this proposal is, overall, better than the baseline. In particular, by clarifying the wording the proposal is better in terms of charging objective (a). It also is positive in terms of taking account of developments (such as HVDC) in the transmission business and thus is better in terms of (c). Finally, by removing the uncertainty it is better in terms of the administration of the CUSC arrangements (e).</p>						
Louise Schmitz						
Original	Yes	Neutral	Neutral	Neutral	Yes	Yes
<p><b>Voting Statement:</b></p> <p>CMP301 brings a level of clarity to the CUSC arrangements for HVDC/subsea which we believe is currently missing. Improving clarity and ensuring a common understanding of charging arrangements leads to a reduction in the level of uncertainty surrounding TNUoS charges, which should help connectors in making investment decisions, aiding competition. For that reason, this CMP better facilitates ACO a). Ensuring a common understanding also improves the efficiency of CUSC arrangements as it means parties do</p>						

not need to raise ad hoc queries, or to rely on any guidance notes which the ESO may publish. This CMP is therefore better against ACO e). Against all other ACOs, this change is neutral but overall the proposal is positive.						
Paul Jones						
Original	Neutral	Neutral	Neutral	Neutral	Yes	Yes
<p><b>Voting Statement:</b></p> <p>As this is formalising an existing working interpretation adopted by National Grid, then there is no impact on charges or on users. Therefore, this modification in itself is neutral in terms of most objectives, although the interpretation which has been adopted does help promote competition. The modification does better facilitate objective e) by providing greater clarity on how these costs are treated in constructing the expansion factors for the circuits concerned.</p>						
Cem Suleyman (Alternate for Simon Lord)						
Original	Yes	Neutral	Neutral	Neutral	Yes	Yes
<p><b>Voting Statement:</b></p> <p>CMP301 clarifies the calculation of expansion factors and ensures comparability between onshore and offshore circuits. This better facilitates competition (Applicable Charging Objective (a)).</p> <p>Providing greater clarity of the charging arrangements reduces uncertainty in the calculation of TNUoS charges. This promotes greater efficiency in the implementation of the CUSC arrangements (Applicable Charging Objective (e)).</p> <p>CMP301 is neutral against the other Applicable Charging Objectives and overall better meets the Objectives.</p>						
Robert Longden						
Original	Neutral	Neutral	Neutral	Neutral	Yes	Yes
<p><b>Voting Statement:</b></p> <p>The modification seeks to clarify an existing interpretation and practice. As such it does better facilitate objective e) by providing greater clarity for users on how National Grid treats the relevant costs.</p>						
Paul Mott						
Original	Yes	Neutral	Yes	Neutral	Yes	Yes
<p><b>Voting Statement:</b></p> <p>The CUSC text about the calculation of expansion factors lacks clarity. The best way to add clarity is to state clearly that the calculation of expansion factors for HVDC and AC subsea circuits connecting onshore assets, should be comparable to other onshore local circuits. The mod would better facilitate CUSC charging objective (a), supporting competition, by creating a level playing field. The effect is also positive against CUSC</p>						

charging objective (c), properly taking account of the developments in transmission licensees' transmission businesses (HVDC transmission circuits haven't existed before in Britain, nor have high capacity AC transmission circuits to islands); and the mod would have a positive effect against CUSC charging objective (e), promoting efficiency in the implementation and administration of the CUSC arrangements (as ambiguity is not efficient, and cannot be readily administered by way of charge calculation)

CMP301 is neutral against the other Applicable Charging Objectives and overall better meets those Objectives.

**Vote 2 – Which option is the best?**

<b>Panel Member</b>	<b>CMP301 BEST Option?</b>
James Anderson	Original
Andy Pace	Original
Laurence Barrett	Original
Garth Graham	Original
Louise Schmitz	Original
Paul Jones	Original
Cem Suleyman (Alternate for Simon Lord)	Original
Robert Longden	Original
Paul Mott	Original

Breakdown of voting:

<b>Option</b>	<b>Overall Support of the option achieving the CUSC Objectives than the baseline</b>
Original	9 yes

The CUSC Panel unanimously recommended that the Original Proposal should be implemented.

## 8 Legal Text

Please refer to Annex 2.

## 9 Impacts

### Costs

Code administration costs	
Resource costs	<b>£0</b> - 0 Workgroup meetings <b>£0</b> - Catering
Total Code Administrator costs	<b>£0</b>

Industry costs (Standard CMP)	
Resource costs	<b>£0</b> - 0 Workgroup meetings <b>£2723</b> – 1 Consultations <ul style="list-style-type: none"><li>• 0 Workgroup meetings</li><li>• 0 Workgroup members</li><li>• 1.5 man days effort per meeting</li><li>• 1.5 man days effort per consultation response</li><li>• 3 consultation respondents</li></ul>
Total Code Administrator costs	<b>£0.00</b>
Total Industry Costs	<b>£2723.00</b>



**CMP301 – Clarification on the treatment of project costs associated with HVDC and subsea circuits**

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **23 July 2018** to [cusc.team@nationalgrid.com](mailto:cusc.team@nationalgrid.com). Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the CUSC Modifications Panel when it makes its final determination.

These responses will be included in the Final CUSC Modification Report which is submitted to the CUSC Modifications Panel.

<b>Respondent:</b>	Simon Swiatek <a href="mailto:sswiatek@forsaenergy.com">sswiatek@forsaenergy.com</a>
<b>Company Name:</b>	Forsa Energy
<b>Do you believe that the proposed original or any of the alternatives better facilitate the Applicable CUSC Objectives? Please include your reasoning.</b>	<p>Yes.</p> <p>We would agree that the present wording in the CUSC is open to interpretation.</p> <p>We believe that the proposed text provides clarification on what specific costs shall be included in the HVDC and AC subsea circuit expansion factors.</p> <p>Our view is that this modification will facilitate in achieving the relevant CUSC objectives. The revised wording will align the treatment of expansion factors for HVDC and AC subsea circuits with that used for onshore circuits.</p> <p>We consider that competition will be supported by this modification. The modification will ensure consistency with treatment of onshore circuits.</p>
<b>Do you support the proposed implementation approach? If not, please state why and provide an alternative suggestion where possible.</b>	Yes
<b>Do you have any other comments?</b>	No

## CUSC Code Administrator Consultation Response Proforma

### CMP301 – Clarification on the treatment of project costs associated with HVDC and subsea circuits

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **23 July 2018** to [cusc.team@nationalgrid.com](mailto:cusc.team@nationalgrid.com). Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the CUSC Modifications Panel when it makes its final determination.

These responses will be included in the Final CUSC Modification Report which is submitted to the CUSC Modifications Panel.

<b>Respondent:</b>	Paul Mott
<b>Company Name:</b>	EDF Energy
<b>Do you believe that the proposed original better facilitates the Applicable CUSC Objectives? Please include your reasoning.</b>	Yes. The existing wording in the CUSC about to the calculation of expansion factors is open to interpretation, lacking clarity. The best way to add clarity is to state clearly that the calculation of expansion factors for HVDC and AC subsea circuits connecting onshore (even if on-island) assets, should be comparable to other onshore local circuits. The proposed legal text achieves this, and if implemented, the mod would better facilitate CUSC charging objective (a), supporting competition, by creating a clear and level playing field in terms of the components of local circuit expansion factors for different transmission circuit technologies. The effect is also positive against CUSC charging objective (c), properly taking account of the developments in transmission licensees' transmission businesses (HVDC transmission circuits haven't existed before in Britain, nor have high capacity AC transmission circuits to islands); and the mod would have a positive effect against CUSC charging objective (e), promoting efficiency in the implementation and administration of the CUSC arrangements (as ambiguity is not efficient, and cannot be readily administered by way of charge calculation).
<b>Do you support the proposed implementation approach? If not, please state why and provide an alternative suggestion where possible.</b>	Yes. Relevant circuits don't exist yet.
<b>Do you have any other comments?</b>	No



## CUSC Code Administrator Consultation Response Proforma

### CMP301 – Clarification on the treatment of project costs associated with HVDC and subsea circuits

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **23 July 2018** to [cusc.team@nationalgrid.com](mailto:cusc.team@nationalgrid.com). Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the CUSC Modifications Panel when it makes its final determination.

These responses will be included in the Final CUSC Modification Report which is submitted to the CUSC Modifications Panel.

<b>Respondent:</b>	Guy Nicholson <a href="mailto:Guy.nicholson@elpower.com">Guy.nicholson@elpower.com</a>
<b>Company Name:</b>	Element Power
<b>Do you believe that the proposed original or any of the alternatives better facilitate the Applicable CUSC Objectives? Please include your reasoning.</b>	<p>We agree that the proposed modification provides clarity on an existing policy and should be welcomed by the industry as a whole.</p> <p>We understand that the Expansion Factor (£/MW·km) is intended to include only those factors which are dependent on both power and distance (such as ac overhead lines, ac underground cables and associated switchgear), and as such reactive compensation equipment, harmonic filtering equipment and asset spares (where these asset spares are related to the reactive compensation equipment, harmonic filtering etc.) should not be included in the Expansion Factor.</p> <p>This change supports applicable CUSC objectives a) because it creates a more level playing field between different technologies and different users and c) because it addresses the practical and detailed aspects of the recent and new developments of HVDC assets in the GB onshore transmission network and e) because it reduces ambiguity in the CUSC.</p>
<b>Do you support the proposed implementation approach? If not, please state why and provide an alternative suggestion where possible.</b>	Yes.
<b>Do you have any other</b>	No

<b>comments?</b>	
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### Onshore Wider Circuit Expansion Factors

- 14.15.70 Base onshore expansion factors are calculated by deriving individual expansion constants for the various types of circuit, following the same principles used to calculate the 400kV overhead line expansion constant. The factors are then derived by dividing the calculated expansion constant by the 400kV overhead line expansion constant. The factors will be fixed for each respective price control period.
- 14.15.71 In calculating the onshore underground cable factors, the forecast costs are weighted equally between urban and rural installation, and direct burial has been assumed. The operating costs for cable are aligned with those for overhead line. An allowance for overhead costs has also been included in the calculations.
- 14.15.72 The 132kV onshore circuit expansion factor is applied on a TO basis. This is to reflect the regional variation of plans to rebuild circuits at a lower voltage capacity to 400kV. The 132kV cable and line factor is calculated on the proportion of 132kV circuits likely to be uprated to 400kV. The 132kV expansion factor is then calculated by weighting the 132kV cable and overhead line costs with the relevant 400kV expansion factor, based on the proportion of 132kV circuitry to be uprated to 400kV. For example, in the TO areas of National Grid and Scottish Power where there are no plans to uprate any 132kV circuits, the full cable and overhead line costs of 132kV circuit are reflected in the 132kV expansion factor calculation.
- 14.15.73 The 275kV onshore circuit expansion factor is applied on a GB basis and includes a weighting of 83% of the relevant 400kV cable and overhead line factor. This is to reflect the averaged proportion of circuits across all three Transmission Licensees which are likely to be uprated from 275kV to 400kV across GB within a price control period.
- 14.15.74 The 400kV onshore circuit expansion factor is applied on a GB basis and reflects the full costs for 400kV cable and overhead lines.
- 14.15.75 AC sub-sea cable and HVDC circuit expansion factors are calculated on a case by case basis using actual project costs (Specific Circuit Expansion Factors).
- 14.15.76 ~~For Calculation of HVDC circuit expansion factors, and AC sub-sea circuit expansion factors, shall include only: both~~ the cost of the converters (where applicable); and ~~and~~ the cost of the cable; and a percentage of the total overhead project costs, defined as the combined costs of the cables and converters (as relevant) divided by the total capital cost of the project are included in the calculation.