

Investment in electricity generation: Impact Assessment on National Grid proposal CMP 192: enduring user commitment

Consultation

Reference: 19/12
Publication date: 13 February 2012
Response deadline: 12 March 2012

Contact: Vanja Munerati
Team: Electricity Transmission Policy
Tel: 020 7901 7472
Email: Vanja.Munerati@ofgem.gov.uk

Overview:

Nearly £30 billion is projected to be invested in the electricity transmission infrastructure over the coming years. User commitment arrangements perform a vital function in ensuring adequate information is available to transmission owners to plan this investment efficiently.

Existing user commitment arrangements for generators already connected to the transmission system differ significantly from those for generators that are awaiting connection. Arrangements for connected generators were only introduced on a temporary basis and are due to expire on 1 April 2012.

In February 2011 National Grid proposed a modification to the Connection and Use of System Code to introduce enduring arrangements. The proposal, CMP 192, was further developed by the industry and submitted to us in November 2011 for our approval.

This document presents, for consultation, our assessment of the impacts of CMP 192 and our developing thinking. Our assessment builds on the methodology developed during the industry process. We intend to make a final decision on whether to accept CMP 192 or any of its alternatives in April 2012 following a review of the responses.

Context

The existing user commitment arrangements have evolved over recent years. The arrangements vary significantly between generators already connected to the transmission network (post-commissioning) and those awaiting connection (pre-commissioning). These arrangements were introduced by Department of Energy and Climate Change (DECC) in July 2010.¹ At the time of their introduction DECC acknowledged that it may be necessary for these arrangements to be amended by the industry.

National Grid has been responsive to the concerns of pre-commissioning generators by addressing concerns over unpredictable levels and, at times, disproportionately large user commitment liabilities. We have supported National Grid's efforts by providing assurance that we consider these arrangements appropriate on an interim basis. This assurance is due to expire on 1 April 2012.

Existing arrangements were cited as a barrier to entry, particularly to smaller parties, during the scoping phase of project TransmiT, our independent and open review of transmission charging and associated connection arrangements.² In January 2011, in response to these concerns, and the inconsistencies and interim nature of the existing arrangements, we requested that National Grid engage with the industry to develop enduring user commitment arrangements. The result of this process is Connection and Use of System Code (CUSC) Modification Proposal 192 (CMP 192), which was presented to us on 22 November 2011 for consideration. The proposed arrangements, alongside our TransmiT proposals, are aimed at helping provide the right incentives for generators to invest, whilst continuing to provide information to transmission companies vital for efficient investment planning.

Associated documents

All documents are available at www.ofgem.gov.uk:

Derogations to facilitate earlier connection of generation – decision on interim approach, May 2009

Electricity Capacity Assessment: Measuring and modelling the risk of supply shortfalls, October 2011, Ref: 132/11

Ofgem's Retail Market Review – update and next steps (liquidity proposals), June 2011

Scope of Project TransmiT and summary of responses to our call for evidence, January 2011

The Retail Market Review - Findings and initial proposals Supplementary appendices, March 2011, Ref: 34/11

¹Please see page 20 of the following document:

<http://www.decc.gov.uk/assets/decc/Consultations/Improving%20Grid%20Access/251-govt-response-grid-access.pdf>

² <http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=1&refer=Networks/Trans/PT>

Contents

Executive Summary	4
1. Introduction	6
The purpose of this document	6
Next steps	6
CMP 192 and its variants	7
Legal and assessment framework	10
Structure of this document.....	12
2. Background	13
Electricity transmission	13
Connection arrangements	13
User commitment	14
Current user commitment methodology	15
Previous proposals / CAP 131	16
3. The proposals	17
Overview	17
CMP 192 original proposal.....	17
The alternative proposals (CMP 192 alternatives).....	23
Transition from the current arrangements.....	25
4. Summary of impact	26
CUSC and Authority's Objectives.....	26
The baseline for assessment.....	26
Summary of analysis of impacts on pre / post-commissioning generation and efficient network planning	27
Different treatment for pre and post-commissioning generation.....	28
Environmental impact of the proposals	29
Risks to health and safety	30
Unintended consequences and perverse incentives.....	30
5. Impact of the proposals on pre-commissioning generation.....	33
Quantitative assessment of the original proposal	34
The impact of the proposed variants on pre-commissioning generation.....	37
The impact of the CUSC security arrangements on smaller generators.....	38
6. Impact of the proposals on post-commissioning generation	40
The impact of unpredictability in future fuel and wholesale prices.....	41
Closure decisions driven by asset health	44
Impacts of regulatory uncertainty	44
7. Impact of the proposals on network planning	48
Appendices	51
Appendix 1 - Consultation response and questions	52
Appendix 2 – Legal and assessment framework	55
Appendix 3 – Current user commitment arrangements	58
Appendix 4– Approach to modelling	61
Appendix 5 – Industry process	68
Appendix 6 - Glossary.....	72
Appendix 7 - Feedback questionnaire	76

Executive Summary

National Grid undertakes investment works to accommodate the needs of generators already connected and those expected to connect to the electricity transmission network. However, a generator may decide to cancel its project or reduce its capacity even where the associated works have already begun. This can result in unnecessary costs to other network users which are ultimately borne by the end consumer. User commitment arrangements place liabilities on generators triggering particular investment works in order to financially secure the investment being undertaken on their behalf.

We consider that user commitment arrangements perform a vital function in ensuring adequate information is available to transmission owners (TOs) to plan and develop the network in a manner that is economical and protects the interests of consumers and wider industry. We also consider it important that user commitment signals are financially backed to incentivise the provision of accurate and timely information and to ensure that the risk of stranded assets is placed on those parties best placed to mitigate and manage the risk. We are also alive to concerns expressed by generators that, due to their financial nature, user commitment arrangements have the potential to have an impact on investment and closure decisions.

We welcome CMP 192 and consider there to be significant benefit to the industry in codifying enduring user commitment arrangements into the CUSC. The existing arrangements are inconsistent in two key respects. Firstly, the principles underpinning the two approaches to pre-commissioning (generators awaiting connection to the transmission system) user commitment vary significantly. Additionally, as a result of having evolved in isolation, the current arrangements treat pre and post-commissioning (generation already connected to the network) users differently without a clear rationale. CMP 192 proposes to address these inconsistencies and deliver a cohesive approach to user commitment for both sets of users.

We consider the basic methodology behind CMP 192 to be well justified, and consider it allocates liabilities to generators in a manner reflective of the risk that any changes in their plans would pose to efficient transmission investment. We also welcome the proposal to separate securities from liabilities. We consider that this would reduce barriers to entry by significantly reducing the security obligations placed on pre-commissioning generation. This is of particular benefit to smaller, independent generators. We set out our initial view that placing a four-year liability on pre-commissioning generators is appropriate. We further set out the reasons why we consider that the proposal to halve the liability on pre-commissioning generators for local works designed to accommodate demand is not appropriate in light of the information that was presented to us to date.

We acknowledge the value to National Grid, and ultimately consumers, of a four-year notice period from post-commissioning generators in lowering the risk of inefficient investment. Our consultation also sets out various factors that may have an impact on generators' ability to provide a four-year notice. We are using this consultation to form a view on the most appropriate notice period for post-commissioning generators and the extent to which it would be appropriate to impose different user-commitment periods on pre and post-commissioning generators.

We are grateful to the industry Workgroup for focusing their alternative proposals to three main areas: sharing of user commitment for local works where they can be shared with demand, the user commitment period for pre and post-commissioning generators, and the grandfathering of existing pre-commissioning user commitment terms. We summarise our developing thinking in each of these areas below:

- **Sharing of local works with demand** - We support the general principle enshrined within the original proposal that local works that can be directly attributed to an individual generator should be underwritten by that generator. We understand that in some instances, particularly island connections, these local works may also accommodate demand. The proposal to halve a generator's liability for local works where demand is present attempts to address this. We currently consider this approach to be inadequately developed and that a decision to implement such a proposal now would place a disproportionate risk on consumers and wider transmission charge payers. We note that even under the original proposal all generators, including those on islands, would benefit significantly from decreased security requirements.
- **Duration of liabilities for wider works** - We support National Grid's view that signals from pre and post-commissioning generators are equally important in planning wider network investment. Conversely, we understand that post-commissioning generators would find it difficult to give four-year user commitment. Concerns presented by a number of parties include difficulties in predicting the remaining operational life of a generator as it approaches decommissioning and the significant levels of regulatory change currently being undertaken. We welcome the consideration the Workgroup has given to the issue of discrimination. Given different drivers behind decisions to connect new generation to the transmission system, and decisions on how long to keep existing plants open, our initial view is that it would not be discriminatory to implement different periods of user commitment on each.
- **Grandfathering** - We understand the principles underpinning the proposal to allow pre-commissioning generators to "grandfather" ie to remain on their existing arrangements until they connect. A stable regulatory climate, including predictable user commitment liabilities, is important in attracting required investment in an efficient manner. However, we are concerned about the additional operational burden and the cost that would be placed on National Grid in implementing several regimes in parallel. In light of this concern, lack of clarity over a number of elements of grandfathering, and our consideration that all generators are likely to benefit from reduced securities proposed under CMP 192, we currently consider that introducing grandfathering arrangements would not be appropriate.

We look forward to hearing your views on this consultation by 12 March 2012.

1. Introduction

Chapter Summary

In this chapter we set out the purpose of this document, give an overview of the CMP 192 proposals and the legal and assessment framework that applies to our decision making process.

Questions: There are no questions in this chapter.

The purpose of this document

1.1. This document presents for consultation our view of the potential impacts of CUSC Modification proposal 192 (CMP 192) and its alternatives, and communicates our developing thinking. The proposal seeks to codify user commitment arrangements for pre-commissioning generators for the first time and replace the Transmission Entry Capacity (TEC) reduction charge-based approach to user commitment³ currently in place for post-commissioning generators.

1.2. We note that all the analysis presented in this document represents our investigation of the potential impacts of the proposal, with the exception of that presented in Chapter 7, which was undertaken by National Grid. Our assessment has been informed by views of stakeholders both during and following the industry process as well as our own analysis. We generally agree with the rationale behind the modelling methodology developed by the CUSC Workgroup during the industry process.⁴ Our analysis builds on the methodology developed by the Workgroup.

1.3. Within this impact assessment we set out our developing thinking on elements of the original proposal and the alternatives for stakeholder comment. This does not constitute our final view but is intended to allow stakeholders to better respond, and to inform our final decision. After this consultation, we will consider responses and decide whether to accept the CMP 192 original proposal or any of its variants.

Next steps

1.4. Publication of this document marks the start of a four-week consultation period during which respondents are invited to submit any comments on our emerging thinking and assessment of the impacts of CMP 192. We would welcome views and additional information from interested parties by **12 March 2012**.

1.5. The current arrangements are set to expire on 1 April 2012 and, if the proposal is accepted, this is the time by which new arrangements are required to be in place. Our consultation and the subsequent decision making process is mindful of this timetable. We note that the issues considered in this impact assessment have

³ Introduced by DECC as part of the Connect and Manage review: <http://www.decc.gov.uk/assets/decc/consultations/improving%20grid%20access/251-qovt-response-grid-access.pdf>

⁴ Assessment methodology developed by the Workgroup is explained in detail in annex 6 of the Final modification report: <http://www.nationalgrid.com/NR/rdonlyres/DA4EB7E8-7168-49CA-A115-81A3A5D9753/50218/CMP192finalCUSCModificationReport10.pdf>

already been subject to a significant stakeholder engagement process and two industry consultations.

1.6. Details on how to respond to this consultation, including contact details for any queries, and a full list of questions from the paper can be found in Appendix 1. We will consider any responses to this consultation before reaching our decision on the CMP 192 proposals.

CMP 192 and its variants

1.7. When a generator applies to connect to the transmission system or increase its TEC, National Grid undertakes the required reinforcement works to the electricity network to accommodate their needs. However, the generator may decide to cancel their project or reduce its TEC. Where the associated works have already begun and the capacity is no longer being used or cannot be reused for an alternative purpose, this can result in unnecessary costs for wider network users and ultimately for consumers. User commitment arrangements place liabilities on users in order to financially secure the investment works. Liabilities are based on an estimated cost profile for the triggered works in order to indemnify all the TOs against the financial risk of unnecessary investment in the event a generator cancels their project.

1.8. Arrangements currently in place differ for pre and post-commissioning generators. Whilst pre-commissioning generators are currently liable for user commitment, post-commissioning generators are not liable to provide specific financial security but need to provide one year and five days notice in order to reduce their TEC. The existing arrangements for pre-commissioning generators were only introduced on a temporary basis and are currently not part of the CUSC.

1.9. CMP 192 seeks to replace the current, interim user commitment arrangements and to add a new section to the CUSC to establish enduring arrangements. CMP192 and its alternatives propose new arrangements for calculating user commitment liabilities and securities for both pre and post-commissioning generators. This section contains a brief overview of the proposal and the variants. A more detailed description can be found in Chapter 3.

Original proposal

1.10. The proposal is best explained by first outlining the guiding principles, then presenting the proposed arrangements for wider and local liabilities, and how these will apply to pre and post commissioning generation. Finally we outline the proposed changes to security requirements, and outline the alternative proposals. The core principles of the proposal are:

- **Local and wider works are treated separately:**⁵ Local works are those works required to connect to the main transmission system; wider works

⁵ These are defined using the charging definition, defined as up to the nearest MITS substation

are works beyond this point. Local works can be directly apportioned to a small number of generators; wider works cannot simply be allocated in this way.

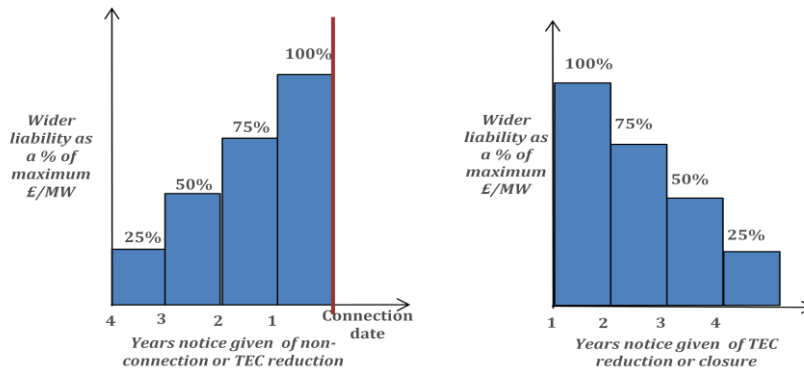
- **User commitment is intended to avoid unnecessary investment, not to indemnify underutilised investment:** The liabilities placed on generators under CMP 192 are intended to avoid unnecessary investment; the proposal does not indemnify the TOs against underutilisation of assets already constructed. Through the methodology pre and post-commissioning generators assume a liability in line with the level of wider investment they are driving. Only pre-commissioning generators assume a liability for local works as any investment is effectively sunk once built.

1.11. As per current arrangements, a pre-commissioning generator's liability more than four years prior to commissioning increases annually from £1/kW to a maximum of £3/kW. In addition, they are required to post security for 100% of this liability. Within four years of commissioning, pre-commissioning generators will assume a wider liability and a local liability. The calculation of these liabilities is described below.

1.12. Liabilities for wider works: National Grid states that the impact on wider network investment of a post-commissioning generator closing without giving adequate notice is the same as a pre-commissioning generator failing to connect; considering both would result in over investment. Wider liabilities cannot simply be assigned to generators and a generic approach has been proposed through which the generation community assume a wider liability equal to 50% of the following year's capex programme, excluding local works (which are allocated to individual generators as outlined below). This approach is intended to allocate liability to generators in a manner reflective of the level of works they are driving.

1.13. Under the original proposal a generator would not assume any wider liability if they can provide more than four years' notice of not connecting, closure or TEC reduction. CMP 192 proposes to place symmetrical wider liabilities on pre and post-commissioning generators. The total wider liability increases as notice decreases, which is intended to encourage generators to give as much notice as possible, and reflect the fact that the risk of inefficient transmission investment increases as the level of notice decreases, as illustrated below.

Figure 1 - Wider liabilities for pre and post-commissioning generators



1.14. Liabilities for Local works: These are only placed on pre-commissioning generators. Unlike wider works, local works can be allocated to an individual generator, and the methodology does this. Unlike the wider liability where generators secure 50% of the work, under the original proposal local liabilities are designed to place a liability on generators equal to 100% of the capital cost of the local work they are driving.

1.15. In keeping with wider works the local liability increases over a four-year period prior to connection. CMP 192 allows generators to choose whether they would prefer their liabilities to increase in a predictable manner based on the projected cost of their local works, or to be totally reflective of the capex incurred at any point in time.

1.16. Reduction factors: In calculating wider and local liabilities, the proposed user commitment methodology includes a number of reduction factors. The proposal asserts these reductions to more accurately reflect the risk to the TOs, and to avoid over-securitisation of assets. The reduction factors proposed under CMP 192 are: sharing risk with consumers, asset reuse by TOs, and catch-up investment due to the enduring Connect and Manage regime.

1.17. The difference between liabilities and securities: Post commissioning generators are not currently required to post any security to cover their user commitment liabilities. CMP 192 does not propose to change this. Pre-commissioning generators are currently required to post security equal to 100% of their liability. CMP 192 seeks to reduce the security to better reflect the risk of the liabilities being drawn-down. Less than four years before commissioning a generator would have to post security equal to 42% of their liability. After key consents have been obtained the security requirements would drop to 10%.

Variants

1.18. A number of alternative proposals, representing variations to the original proposal, have also been put forward by the industry Workgroup. The CMP 192 alternatives focus around varying the following components of the proposal:

- Three options have been proposed for the user commitment period for wider works: retain the four-year commitment period for pre and post-commissioning generation presented in the original; reduce both pre and post-commissioning user commitment to two years; or reduce only post-commissioning user commitment to two years.
- Reducing the pre-commissioning generator’s liability to 50% of the local works where they can be shared with demand.
- Allowing existing pre-commissioning users to remain on their existing arrangements until they connect (grandfathering).

1.19. Each possible combination of these alternatives has been presented to the Authority, resulting in 12 proposals for assessment.

Legal and assessment framework

Industry process to date

1.20. National Grid raised CMP 192 in February 2011.⁶ Due to the complex nature of the proposal and the wide-ranging industry impacts, a Workgroup was formed to further develop and assess the impacts of the proposal. As set out above, a number of alternatives to the main proposal were also developed. The preferred option of both the Workgroup and the panel was the alternative option which allowed for user commitment arrangements for pre-commissioning generators already holding connection agreements to be grandfathered until they connect, shared the liability for local works 50/50 with demand users and reduced the duration of the notice period to two years for both pre and post-commissioning generators. Table 1 shows the preferences of both the Workgroup and the panel on the elements of the proposal and its alternatives.

Table 1 - Workgroup and panel preferences

Proposal and Alternatives		Work group	Panel Vote
User commitment period	4 years pre and post commissioning	3	0
	4 years pre and 2 years post commissioning	6	3
	2 years pre and post commissioning	5	5
Grandfathering	In favour	12	7
	Against	2	1
Sharing local liability with demand users	In favour	11	6
	Against	3	2

⁶<http://www.nationalgrid.com/NR/rdonlyres/D2D6F81D-7C3E-4049-8429-817E6A5DA657/45775/CMP192EnduringUserCommitmentv1.pdf>

Responsibilities of the Authority

1.21. Upon receipt of the Final Modification Report from the Panel, we are required to make a decision as to whether or not to direct implementation of the Amendment Proposal or any alternative that may have been raised through the amendments process. A detailed breakdown of the alternatives and the preferences of the Workgroup and the panel can be found in Appendix 5.

1.22. Where we are proposing to make a decision that is "important" (within the meaning of section 5A of the Utilities Act 2000)⁷ we are required (save where the urgency of the matter makes it impracticable or inappropriate for us to do so) to undertake an impact assessment or to publish a statement setting out why we consider it unnecessary to carry out an impact assessment. An impact assessment must include an assessment of the likely effects on the environment of a proposal. We consider CMP 192 to be "important" for the purposes of section 5A of the Utilities Act 2000 in terms of the potential significant impact of the proposals on market participants and the potential significant impact on the environment. It is on this basis that the Authority has decided to carry out and publish this impact assessment.

Decision making process

1.23. In making our final CMP 192 decision we will assess the proposal (and any alternatives) against the applicable CUSC objectives which are set out in standard condition C10 of National Grid's transmission licence. The CUSC Objectives are:

- a) The efficient discharge by the licensee of the obligations imposed on it under the Act and its Transmission Licence;
- 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.
- c) Compliance with the Regulations and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.⁸

1.24. With respect to CUSC objective 'a', there are a significant number of obligations imposed on National Grid through both the Electricity Act and their licence. Of particular significance when considering CMP 192 are the following:

- A duty to "develop and maintain ... an efficient, co-ordinated and economical system[s]" – section 9 of the Electricity Act 1989 (as amended).
- An obligation not to discriminate between persons or classes of persons for the purpose of connection to the National Electricity System – standard licence condition C7: Prohibition on discriminating between users.

⁷ Further detail can be found in Appendix 2.

⁸ This objective was added to the CUSC as part of the 'third package' of EU legislation.

1.25. We must also consider whether the proposal is consistent with our wider statutory duties, including those arising under European law. Further, we must determine which of the options available is best calculated to further the Authority's principal objective to protect the interests of existing and future consumers, wherever appropriate, by promoting effective competition.

1.26. Appendix 2 of this document sets out in further detail the legal and assessment framework for the Authority's decision including the requirement to undertake an impact assessment in particular circumstances.

Structure of this document

1.27. The remainder of this document is structured as follows:

- **Chapter 2** outlines the background to user commitment.
- **Chapter 3** summarises CMP 192 proposals and variants.
- **Chapter 4** presents our assessment and developing thinking on the impacts of the CMP 192 proposals
- **Chapters 5 & 6** present in detail our assessment of the impacts of the proposals on pre-commissioning and post-commissioning generation.
- In **Chapter 7**, we present National Grid's analysis of the impacts of the proposal on network planning.

1.28. Further detail including a description of our approach to quantitative analysis can be found in the annexes.

2. Background

Chapter Summary

In this chapter we set out the background to user commitment and the current arrangements, and provide a historic context to the proposals being considered

Questions: There are no questions in this chapter.

Electricity transmission

2.1. The electricity transmission system transfers electricity in bulk at high voltage from generators to large energy users or substations near demand and local distribution networks. Whilst there are three regional monopoly transmission owners (TOs) of the onshore transmission network, and existing and future licensed owners of the offshore transmission network,⁹ the electricity transmission system is operated by National Grid in its role as the System Operator (SO) for the onshore and offshore transmission system. The SO is responsible for making sure that electricity supply and demand stay in balance and the system remains within safe technical and operating limits.

2.2. TOs are provided with a regulated revenue stream used to fund their costs, including an appropriate return and allowance for depreciation on past investment in the network. This revenue is recovered from users of the transmission system through Transmission Network Use of System (TNUoS) charges.

Connection arrangements

2.3. In its role as SO, National Grid has a licence obligation to provide offers to parties seeking connection to, and use of, the transmission system. Any prospective generator wishing to connect to the transmission system needs to apply to the SO, who then contacts the local TO who may need to upgrade the transmission system in the respective area to accommodate the connection. The overall development of the electricity transmission system is mainly driven by existing and anticipated connection requests.

2.4. Following the introduction of the enduring Connect and Manage arrangements,¹⁰ all new generation is able to apply for a connection date based on the time taken to complete a project's enabling works ahead of the completion of wider reinforcements. Therefore, transmission capacity is currently allocated prior to the completion of the wider reinforcement works required to support the connection.

⁹ The onshore TOs are National Grid Electricity Transmission for England and Wales, SP Transmission Limited for southern and Scottish Hydro-Electric Transmission Limited for northern Scotland.

¹⁰ The enduring regime was fully implemented on 11 February 2011. The Government's July 2010 conclusions document can be found at: <http://www.decc.gov.uk/assets/decc/consultations/improving%20grid%20access/251-govt-response-grid-access.pdf> Enduring Connect and Manage builds on the prior, interim Connect and Manage regime that Ofgem introduced in May 2009: <http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/TAR/Documents1/20090508%20derogations%20interim.pdf>

Connections in advance of works required to restore compliance of the system with the Security and Quality of Supply Standard (SQSS) are subject to approval of the associated derogation against applying the security standards.¹¹ Any resultant constraint costs and the cost of wider works required on the transmission system are recovered from all users of the transmission system.

2.5. Where the generator accepts the connection offer, the SO produces the connection agreement which specifies their allocated TEC, financially firm transmission access rights and sets the maximum level of output which the generator may not exceed. At the same time, the generator takes on the obligation to pay transmission charges, including its annual TNUoS charges based on their allocated TEC, from commissioning. The connection agreement also provides the right to the generator to terminate the agreement, even after the works to accommodate its connection have already commenced. Therefore, pre-commissioning generators assume an escalating liability reflecting the work being undertaken on their behalf. Post commissioning, generators currently assume a liability to give a minimum of one year and five days notice in advance of TEC reduction or closure, as described in the next section.

User commitment

2.6. We are entering a period of extraordinary levels of investment in electricity transmission infrastructure in Great Britain. Through their recent business plan submissions the onshore TOs are projecting investment of around £13 billion¹² over the next price control period (2013-2021) to accommodate the connection of new generation (wider works) and for local connection works. Likewise, offshore TOs are projecting to spend in excess of £14 billion¹³ up to 2030. It is therefore essential onshore and offshore TOs are provided with appropriate signals so that this unprecedented level of investment is undertaken in the most efficient way. One such signal is through the user commitment obligation. In our January 2011 Project TransmiT letter,¹⁴ we set out that we expect National Grid to focus, as a matter of priority, on developing an enduring solution to user commitment.

2.7. When a generator applies to connect to the transmission system or increase its TEC, reinforcements to the electricity network may be required to accommodate that generator. The connection offer contains an estimated cost profile for the reinforcements in question in order to financially secure the works required for its connection. Once the reinforcement works have been completed, the generator is no longer required to provide security for those works and is liable to pay TNUoS charges on an ongoing basis.

¹¹ Under the enduring Connect and Manage regime any SQSS derogations needed to allow connections in advance of wider works are now undertaken by the SO.

¹² According to TO's projected load related capex programme as part of their RIIO-T1 best view, 2009-10 prices.

¹³ Based on national Grid's ODIS 2011 Base Case Scenario C. For more detail, please see: <http://www.ofgem.gov.uk/Networks/offtrans/pdc/pwg/OTCP/reports/Documents1/TNEI-7098-03-Asset%20Delivery%20Workstream-Release-15-12-2011.pdf>

¹⁴ Scope of Project TransmiT and summary of responses to our call for evidence, available at: http://www.ofgem.gov.uk/Networks/Trans/PT/Documents1/110125_TransmiT_Scope_Letter_Final.pdf

2.8. However, a generator may decide to cancel its project (or to reduce its capacity) before the commissioning date. Where the associated reinforcement works have already begun, this can result in unnecessary costs, for example, when this additional capacity is no longer being used and is not capable of being reused for an alternative purpose. In order to protect TOs, and ultimately the end consumer, from the risk of such costs occurring, generators are liable to provide financial security to cover for costs associated with their projects. User commitment is an underlying contractual obligation between the generator as a user and the SO¹⁵ through which National Grid as SO indemnifies all TOs against the financial risk of unnecessary transmission investment in the event that a generator cancels its project.

Current user commitment methodology

2.9. As already noted existing arrangements differ for pre and post-commissioning generators. This section provides a brief overview of the current arrangements for both pre and post-commissioning generators. Further details are provided in Appendix 3.

2.10. Post-commissioning generators are currently not liable to provide specific financial security for user commitment. Instead, they need to provide one year and five days notice in order to reduce their TEC. This minimum notice period increased from five days effective 1 April 2011 as part of the enduring Connect and Manage regime.¹⁶ Notice of less than one year and five days incurs a year's TNUoS charge in addition to charges for the current year.

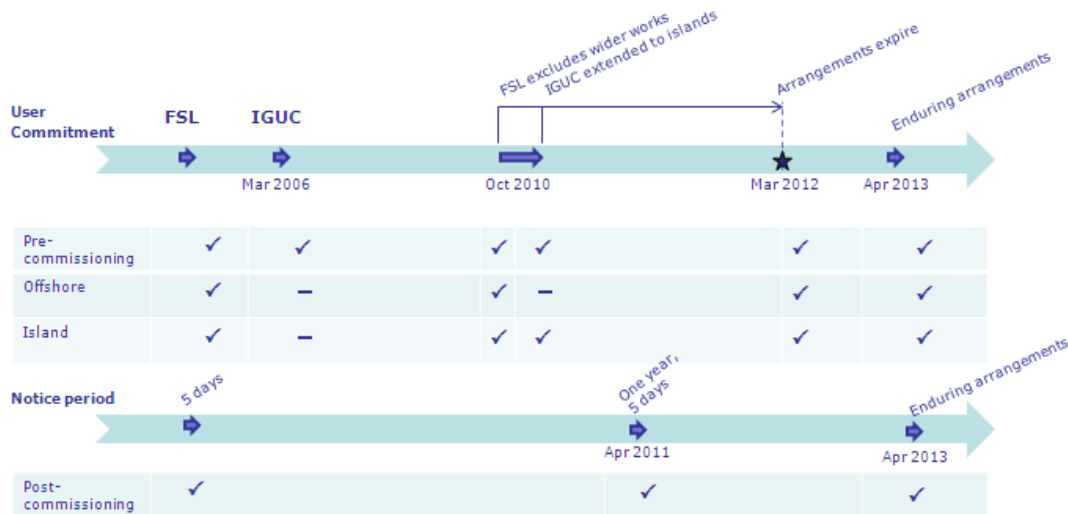
2.11. Pre-commissioning generators are liable to provide financial security for the period from signature of a connection agreement until the power station is commissioned, operational and liable to pay TNUoS charges. They can currently choose which methodology they wish their liabilities to be calculated under: the Final Sums, where the generator underwrites the actual attributable costs, or the Interim Generic User Commitment (IGUC), where securities are provided on a generic basis. Exceptions to this are offshore connections¹⁷ where liabilities are currently calculated using the Final Sums methodology only. These are described in more detail in Appendix 3.

¹⁵ Electricity generators applying for new or increased capacity are liable for sums calculated in accordance with and required to provide security using the methodology defined in their Connection agreement with National Grid.

¹⁶ Please see footnote 10 for the link to the Connect and Manage conclusions document.

¹⁷ Due to the lack of existing data, National Grid has stated in correspondence that it has not been possible to derive a generic approach for offshore connections at the present time.

Figure 2 - Evolution of user commitment arrangements



Previous proposals / CAP 131

2.12. In conjunction with the IGUC methodology, National Grid also reviewed user commitment for new and existing generators and introduced a proposal for enduring arrangements under CUSC Amendment Proposal 131 (CAP 131). CAP 131 was submitted to the CUSC Panel in September 2006.¹⁸ As part of the industry assessment of the proposal, a number of alternative proposals were developed as variations of the same framework set out in the original proposal. The Authority rejected CAP 131 on 13 October 2008. We considered that the proposed arrangements did not adequately consider potential discrimination between 'new' and 'existing' generators.¹⁹

2.13. CAP 131 sought to introduce an enduring generic methodology for calculating the securities based on IGUC with some variations, replacing the Final Sums methodology. The proposal also sought to increase the level of user commitment provided by existing generators by introducing a requirement to provide two years' notice of station closure or face financial penalties. Finally, CAP 131 proposed to introduce a non-refundable holding fee in the period before works commence, reduce the total level of costs secured by generators by 50% and to introduce a charge for generators who alter their capacity before connection.

¹⁸ CAP131 proposal form and other relevant documentation, including the decision letter from the Authority can be found at: http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/amendments/amendment_archive/

¹⁹ Pre and post commissioning generators were referred to as 'new' and 'existing' in CAP131.

3. The proposals

Chapter Summary

In this chapter, we outline the industry's rationale for the proposed changes to the CUSC as set out in the core CMP 192 proposal and its alternatives. We present the guiding principles of the proposal and how those would apply to both pre and post-commissioning generators.

Questions: There are no questions in this chapter.

Overview

3.1. Under the CMP 192 proposed enduring user commitment methodology, all generators retain a liability for wider transmission network investment, whilst only pre-commissioning generators retain a liability for local works. The basis for this distinction is that once local works are undertaken, they are in effect sunk costs for the relevant generator and it would not be reasonable to spread them across all generators. CMP 192 further proposes that the arrangements apply to TEC reductions as well as cancellations and closures on the basis that a reduction in TEC by a post-commissioning generator has the same impact on transmission investment plans as the closure of a similar sized generator. The proposed user commitment period for all generators is set at four years.

3.2. In calculating wider and local liabilities, the proposed user commitment methodology includes a number of reduction factors. These reductions are intended to reflect more accurately the risk to the TOs, and to avoid over-securitisation of assets. The reductions factors proposed under the CMP 192 include sharing risk with consumers, asset reuse by TOs, and catch-up investment due to the enduring Connect and Manage regime.

3.3. A number of alternative proposals, representing variations to the original proposal, have also been put forward by the workgroup and a selection of them has been presented to us for consideration. The CMP 192 alternatives focus mainly on reducing the duration of the notice period required and increasing the sharing of risk with consumers.

CMP 192 original proposal

3.4. Under CMP 192, the total Value at Risk (VAR) is the value of new investments that the TOs are undertaking that, if better information were available, could be more efficiently managed to the advantage of all network users. Under the proposal, VAR relates to the TOs' capex in the year of termination. The methodology proposed under CMP 192 differs for local and wider works.

3.5. Under the proposal, the user commitment for local works is based on a cost-reflective approach and is specific to the capex of the works, in a similar way to the current Final Sums arrangements. Furthermore, the local VAR is subject to the SQSS compliance and asset reuse scaling factors and would be fixed for four years.

3.6. User commitment for wider works is based on the TOs' capex being split by an assessment of the capability of transmission boundaries, as set out in the Seven Year Statement (SYS). In order to apportion wider VAR from TOs' capex, the global wider capex is separated into load-related (LR) and non-load related (NLR) expenditure. The LR and NLR capex for each boundary would be added together and mapped to zones as set out in the SYS.

3.7. As the TOs spend LR capex to increase the capability of the transmission system, the proposal would apportion the capex based on the increase in boundary capability over the four year notice period. On the other hand, TOs spend the NLR capex to replace assets and maintain the capability of the transmission system. Therefore the proposal would apportion this capex based on the existing capability of the boundary.

Separation of wider and local works

3.8. The proposal assumes that local investments can be directly attributable to a limited number of generators, whilst wider works are difficult to disaggregate and apportion due to the nature of the system and other factors, including demand security. CMP 192 makes a small number of generators liable for those local works which can be directly attributed. The proposal defines local works as works up to the first Main Integrated Transmission System (MITS) node, where a MITS node is defined as being a node with more than four transmission circuits, or two or more transmission circuits and a Grid Supply Point. This definition is a modified version of the charging definition currently contained with Section 14 of the CUSC.

Liabilities for wider works

3.9. **User commitment notice period and profile of costs.** CMP 192 proposes that the time period within which a generator has a liability to the TOs is based on the notice period that TOs reasonably require to change investment plans with the lowest practicable cost impact. National Grid have determined that this optimum notice period is four years on average based on analysis of the TOs' historical investment spend profiles.²⁰ Under the proposal, this generic four year notice period would provide sufficient information for the TOs to avoid unnecessary transmission investment. Four years is the proposed user commitment period for both pre-commissioning and post-commissioning generators.

3.10. Within this four-year user commitment period, the proposal envisages increasing generators' liabilities through a stepped profile of 25%, 50%, 75% and 100% depending on the number of years' notice given. For example, a pre-commissioning generator which terminates in the year of commissioning (or a post-commissioning generator which closes in the year of notification) would result in a 100% liability for its Cancellation Amount.²¹ Likewise, a pre-commissioning generator

²⁰ The rate of change of increase in spend for TO investments is analysed and results presented in the Final Modification Report, page 20.

²¹ The Cancellation Amount represents to the sum of liabilities for wider and attributable (local) works as described in the following sections.

terminating between three and four years prior to commissioning (or a post-commissioning generator providing between three and four years' notice prior to closure) would be subject to a liability of 25% of its Cancellation Amount. The Workgroup has also put forward alternative liability profiles. These are discussed in more detail later in this chapter.

3.11. Reduction factors: CMP 192 includes several reduction factors for calculating wider liabilities. These are summarised below.²²

- *Risk sharing with consumers.* CMP 192 proposes a 50/50 sharing of wider investment risk between consumers and demand on one hand and generation on the other. The proposal contends that generation and demand both benefit from, and drive wider transmission investment equally and that the risk of such wider investment being inefficiently incurred should be shared. For demand, this benefit includes greater reliability and improved access to competitive generation sources.
- *Asset reuse by TOs.* When a generator cancels its project and, as a result, a transmission investment is no longer required, the TO might be able to reuse a certain proportion of those assets, for example by moving them to other projects or use as spares. The current user commitment methodologies are based on the forecast TO spend and take no account of the potential for transmission asset reuse in calculating securities (although under Final Sums, asset reuse is considered during any reconciliation). The generic asset reuse factor was proposed for wider works and a specific factor determined by the TO for local works. Based on the analysis undertaken by National Grid to identify the actual proportion of the reusable transmission assets, an average transmission reuse factor of 21% was identified for non-transformer assets. Transformer costs were excluded, as they are usually economic to reuse. National Grid further looked at what proportion of the forecast 2011-12 TOs' capex figures were transformer and non-transformer assets, and applied these asset reuse figures (100% and 21% respectively). This analysis indicated that a generic Global Asset Reuse Factor (GARF) should be 33% of TOs' capex spend.
- *Catch-up investment due to the Connect & Manage initiative.* Under enduring Connect and Manage arrangements, generators can gain access to the system prior to the transmission investment required to support them being completed. Where generators are connected in advance of works required to restore compliance of the system with the Security and Quality of Supply Standard (SQSS), the transmission investment is still required to meet SQSS fault level compliance. Therefore, the proposal considers that the risk of investing in transmission in those areas is lower and seeks to reduce the level of user commitment required for wider works for those generators. In order to account for reduced risk of investing on the affected boundaries, the proposal includes a linear function for each boundary on the system. The function is determined as a ratio of the 'available capability' over the 'required capability' specified in Section 8 of the Seven Year Statement (SYS), capped at 100%.

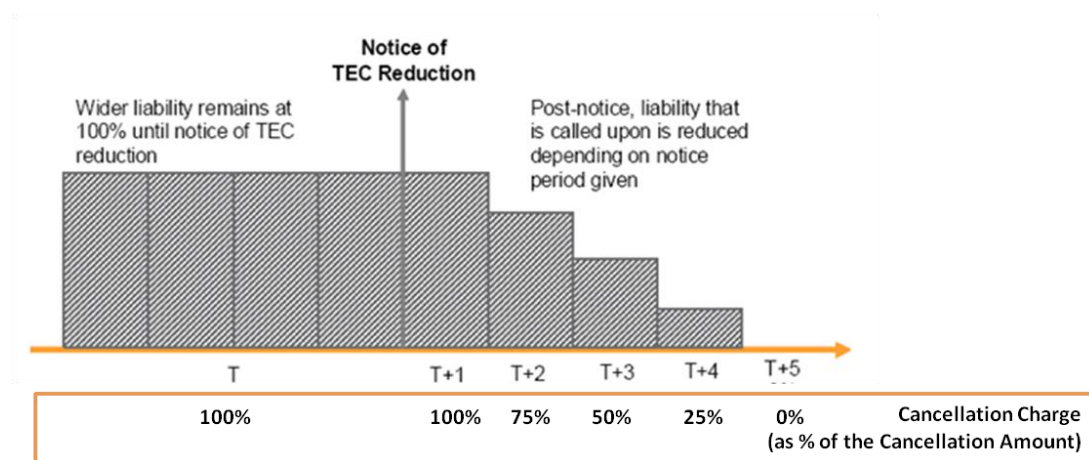
²² The proposal noted that the level of transmission capacity sharing between power stations is included implicitly within the CMP192 methodology through the apportioning of transmission capex across all generators.

3.12. **Methodology for post-commissioning generators (wider works):** Under CMP 192, post-commissioning generators would be liable for a cancellation amount that corresponds to the wider liability that applies to the zone in which they are connected on a rolling annual basis. Post-commissioning generators would not have a liability for local works under CMP 192.

3.13. The cancellation amount for post-commissioning generators would be determined from the total annual TOs' capex excluding local works. The amount would further be reduced by the User Risk Factor (URF), set at 50% to account for risk sharing with consumers, GARF, set at 33% and representing the transmission assets which a TO could potentially reuse on another project, and boundary compliance factors before being apportioned to the SYS zones.

3.14. When a post-commissioning generator intends to close (or reduce its TEC), the amount of notice it provides to the TO acts to reduce its Cancellation Amount. If a generator notifies closure or reduction in capacity further than four years away, it is not liable for the Cancellation Amount. A post-commissioning generator who closes in the year of notification would result in a 100% liability for its Cancellation Amount. Likewise, a pre-commissioning generator terminating between three and four years prior to commissioning would be subject to a liability of 25% of its Cancellation Amount. This is shown in the figure below.

Figure 3 – Relationship between Cancellation Amount and Liabilities



3.15. The proposal contains a one-off opportunity for all generators to notify the SO that they intend to leave the system (or reduce its TEC) prior to a specified date (March 2016). This provides an opportunity to remain on the existing, baseline arrangements. The rationale behind this is that some power plants (such as Large Combustion Plants (LCPs) and Magnox generating plants) are closing over the four-year period and are excluded from future decisions on transmission reinforcement. Therefore, all generators and not only those with clear time restrictions are eligible for this one-off exclusion.

Liabilities for local works

3.16. The local liability amount is specific to the attributable works required for that generator, once sharing with any nearby generators is accounted for as a result of clustering. The proposal assumes that local transmission system assets are less likely to be used following termination by a generator which prompted the works. Therefore, under the CMP 192 main proposal, the generation has full, 100% exposure to the local works. One of the alternatives proposes sharing for local works where demand already exists or is planned at the site. Once a generator has commissioned, the local liability falls away and the generator remains liable only for wider transmission investment as a post-commissioning generator.

3.17. The cost of local works is reduced by a Local Asset Reuse Factor (LARF) along with a Strategic Investment Factor (SIF). The LARF is determined by the TO on a generator-specific basis and represents the transmission assets being constructed for that generator which the TO could potentially reuse on another project. The proposal contends that the factor would be cost-reflective and that it may vary as the project progresses. The proposal also includes a provision that this specific attributable factor would be detailed along with the attributable TO capex and communicated to the customer through the agreed process. The SIF is a discount that applies in the event that a TO builds greater capability than is required for the contracted generation connecting to that asset, and is calculated for each circuit, cable or substation as a ratio of total contracted generation capability against transmission asset capability.

3.18. Generators have the option to choose between a fixed or variable local works liability when signing their connection offer. The fixed liability is set at four years and six months prior to commissioning; it is non-reconcilable and only changes in the event of a change to the commissioning date. On the other hand, the variable local liability may fluctuate within the four-year period and is reconcilable upon cancellation as under the current Final Sums arrangements. Where a generator chooses variable liability, it receives six monthly updates and can switch over to fixed based on the latest update. Once on fixed liability, a generator cannot switch back to variable.

3.19. Beyond four years prior to commissioning, a pre-commissioning generator's liability starts at £1/kW and increases annually by £1/kW. This continues to a maximum of £3/kW unless the project only has four years left until commissioning. This liability is not linked to either the attributable or wider liability values. All alternative proposals presented to the Authority for decision limit this to the fixed approach only, and also include a cap to this liability calculated at the first year of the fixed approach as described below, i.e. 25% of the total attributable works liability. Four financial years prior to commissioning, pre-commissioning generators will have a liability based on a zonal wider liability and will also have a specific local liability.

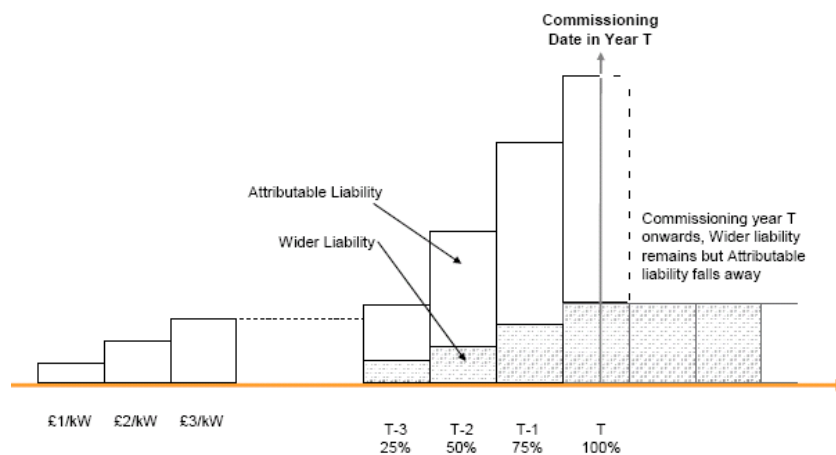
3.20. The wider liability amount is calculated annually for pre-commissioning generators as a £/MW unit liability, and varies by the SYS study zone that the user is connecting to as per an equivalent post-commissioning user as already described in

the previous section. The liability reduces from 100% by 25% increments depending on the notice provided as described above.

3.21. Upon cancellation or capacity reduction, a pre-commissioning generator will incur a Cancellation Charge. This is attributed to its location at a rate of 25% per year of its Cancellation Amount until full commissioning under the fixed approach. The following figure depicts a generator’s liabilities for both local and wider works during the entire pre-commissioning period under the fixed approach, and a generator’s wider liabilities post-commissioning.

3.22. Where a pre-commissioning project is experiencing a slippage, liabilities are frozen at their present level and rise again in line with a new profile until project completion. However, if the slippage is due to variation to the transmission programme and therefore outside of generator’s control, the liabilities reduce to a previous level in order to match the new profile.

Figure 4 - Liabilities profile



Security required for user commitment liabilities

3.23. The proposal seeks to reduce the security required against the liabilities based on different stages of a power station’s generating life. This reduction is based on a generic assessment of the likelihood of cancellation and closure. The proposal notes that the overall liability does not change but that the reduction better reflects the risk of that liability being realised. Under the original proposal only pre-commissioning generators will be required to secure a fraction of the attributable liabilities.

3.24. For pre-commissioning generators, the proposal contains a three-stage reduction based on whether a developer has achieved key consents. Prior to four years before the commissioning date, the required securities would be 100% of the liabilities. Within four years, but prior to the key consents being granted, there is a

42% risk of a generator project cancelling its connection agreement. This risk drops to 10% after the consents are in place.

3.25. The level of securities requested may also vary depending on the type of power plant built. National Grid has traditionally acknowledged that for some types of plants (e.g. nuclear) the TO may be sure that the plant will be built far in advance from the date of commissioning (mainly because the planning process takes longer), while for other type plants the uncertainty is higher. For this reason, the level of securities required has typically followed the following patterns -

Table 2 - Securities profiles for pre-commissioning generators²³

Years	Y-3	Y-2	Y-1	Y
CCGT	42%	42%	10%	10%
Coal	10%	10%	10%	10%
Nuclear	10%	10%	10%	10%
Biomass	42%	42%	10%	10%
Onshore Wind	42%	42%	42%	10%
Offshore Wind	42%	42%	10%	10%

The alternative proposals (CMP 192 alternatives)

3.26. As a response to the original proposal, the Workgroup developed a broad range of alternative regimes in response to various concerns raised by the members. The alternative proposals focus on reducing the duration of the notice period from four to two years, increasing the sharing of risk with consumers where demand users also derive a benefit and grandfathering the existing pre-commissioning user commitment terms. These are described in more detail in the following sections.

Commitment period

3.27. Under CMP 192 proposal, both pre and post-commissioning generators are required to give four years' notice of cancellation, or TEC reduction and disconnection if they wish to avoid all liabilities. The alternative varies the duration of the user commitment regime for both pre and post-commissioning generation.

3.28. The main rationale for varying the length of the commitment period is the treatment of post-commissioning generators. Some Workgroup members argued that a four-year notice period does not take into account the level of information that post-commissioning generators can provide. It was further argued that the decision to reduce TEC or disconnect is based on short-term factors such as expected future

²³ Where Y refers to the commissioning year.

power prices and spreads. The Workgroup members also noted the lack of liquidity in the forward electricity market beyond one or two years. Some Workgroup members therefore considered that post-commissioning generators would only be able to give up to one or two years' notice of TEC reduction or disconnection or that a four-year notice period could lead to a premature market exit by some generators, depending on the circumstances of the individual generator. Finally, some considered that the issue of timely transmission investment signals could alternatively be addressed by improvements in the communication process for connections through a closer working relationship between the TOs and generators.

3.29. In light of the above concerns, the Workgroup suggested three possible alternatives where pre and post-commissioning generators provide notice:

- 4 years for pre and post-commissioning generators with 25%, 50%, 75% and 100% profile as per the original proposal;
- 4 years for pre-commissioning with profile as per the original proposal and 2 years for post-commissioning with 75% and 100% profile; and
- 2 years for pre and post-commissioning for wider works with a 75% and 100% profile, 4 years for pre-commissioning generic local works with a profile as per the original proposal and a variable period with a variable profile for pre-commissioning specific local works.

Sharing of local liabilities

3.30. This alternative proposes a demand sharing factor of 50% into the calculation of attributable liability. The proposed factor would only be applicable for attributable transmission investments that were designed to accommodate demand, either existing or in the future.

3.31. Under the current user commitment arrangements under IGUC, the liability for wider and attributable works is shared 50% between pre-commissioning generators and consumers. On the other hand, the original CMP 192 proposal includes a sharing factor for wider works only and the liability for attributable works is 100% on pre-commissioning generators. Some Workgroup members argued that this approach could provide an unreasonable barrier for new entrants, in particular for generators on islands and offshore generators as their connection to the onshore transmission system is classified as attributable works under the original proposal and the current user commitment arrangements. This alternative proposal would apply the 50% sharing factor to both wider and attributable works.

Grandfathering

3.32. This option would allow generators that have already signed user commitment agreements under existing arrangements to extend the regime until their commissioning date and therefore not be subject to CMP 192 until post-

commissioning. This alternative proposal does not affect the post commissioning generators.

3.33. The main rationale for this alternative proposal put forward by the Workgroup is that some pre-commissioning generators would benefit from staying on the methodology that is currently in their connection agreement. This option was put forward in order to minimise disruption and remove uncertainty for generation projects close to commissioning.

3.34. The grandfathering option would include all aspects of a generator's current contractual arrangements including security which means that they would not benefit from reduced security requirements under CMP 192. Generators would however have the option to switch onto CMP 192.

Transition from the current arrangements

3.35. If the proposal is accepted, the new user commitment arrangements would take full effect from April 2013. Therefore, there will be a period of transition from the current, interim arrangements to the new arrangements if the proposal is accepted.

3.36. During this transition period we consider that it is appropriate to extend the current agreement so that any difference between efficiently incurred costs and costs secured by prospective users under either the IGUC or Final Sums methodology will be recoverable by National Grid.

3.37. As part of its proposal, National Grid would send revised user commitment agreements and notices to network users by September 2012. From that point, generators would have the option of either providing notice of closure within four years or moving to the new arrangements.

3.38. Under the proposal and its alternatives, existing commissioned generators who do not wish to move to the new arrangements, would need to provide notice within six months of the implementation date (end of September 2012) of closure within four years of the implementation date (end of March 2016). Likewise, all connection offers which would take effect from the proposed go-live date, April 2013, would by default be on the new arrangements.

4. Summary of impact

Chapter Summary

This chapter summarises our assessment of the impact of CMP 192 and our developing thinking on the alternatives proposed. We discuss the impact on pre and post-commissioning generation, and the impact on network planning in greater detail in Chapters 5 – 7.

Question 1: We welcome stakeholders' views on whether we have identified all the relevant impacts of CMP192.

Question 2: Do stakeholders agree with our assessment of the potential environmental impacts of the proposal?

Question 3: We seek stakeholders' views on the potential implications of the potential perverse incentives, and views as to how they may be mitigated.

CUSC and Authority's Objectives

4.1. In undertaking an impact assessment of CMP 192 and its variants we are required to consider the proposals against the objectives of the CUSC and the Authority. These are presented in detail in Appendix 2.

4.2. We consider consumers' interests to be best served by striking the appropriate balance between providing adequate information to allow transmission licensees to "develop and maintain ... an efficient, co-ordinated and economical system[s]",²⁴ and facilitating competition in a non discriminatory manner.²⁵

The baseline for assessment

4.3. The current arrangements, as discussed in Chapter 2, have evolved in response to the concerns of generators. We have supported National Grid in its work to remove obstacles to generation connection, and have been happy to support its proposed changes on an interim basis. However, our support was always on an interim basis, and we note that the current arrangements are inconsistent in two respects -

- Firstly, the principles underpinning the two approaches to pre-commissioning user commitment vary significantly. Under IGUC, generators are asked to provide user commitment for approximately 50% of both wider and local transmission investment; under Final Sums generators are asked to provide user commitment for 100% of the local works.
- Secondly, as a result of having evolved in a different manner, the current arrangements treat pre and post-commissioning users differently without a clear rationale.

²⁴ Section 9 of the Electricity Act 1989 (as amended)

²⁵ Standard licence condition C7

4.4. The interim nature of the existing arrangements means that there is not a stable baseline against which the impact of CMP 192 can be compared for pre-commissioning generation. For the purpose of this impact assessment, we have considered the baseline to be the existing arrangements with significant uncertainty over arrangements beyond 1 April 2012.

4.5. The existing post-commissioning user commitment arrangements are enshrined within the CUSC, and for the purposes of this assessment we have taken the requirement for post-commissioning generators to provide at least 1 year and 5 days' notice of closure or TEC reduction as the baseline. We note however that when these arrangements were introduced, DECC considered that they would be further developed by the industry.

Summary of analysis of impacts on pre / post-commissioning generation and efficient network planning

4.6. The table below presents a summary of the impact of the proposal and its variants. The assessment has been undertaken quantitatively, assessing the impact of CMP 192 on a sample of pre-commissioning generators and assessing the likely impact of uncertain wholesale electricity and fuel prices on generators abilities to provide user commitment. Additionally, we have undertaken qualitative analysis and assessed a number of the arguments presented by stakeholders throughout the industry process. We seek stakeholders' views on this analysis, in particular our assessment on the impacts on barriers to entry for pre-commissioning generators, closure decisions for post-commissioning generators and efficient network planning on the part of the TOs, as summarised below:

Figure 5 - Summary of impacts and developing thinking

	Impact / Developing thinking
Pre-commissioning generation (Chapter 5)	Levels of securities: For all generators, securities will be significantly decreased.
	Levels of liability: On aggregate these remain roughly the same. There are redistributive effects discussed in Chapter 5, but we think liabilities under CMP 192 better reflect the risk of inefficient investment posed by a generator failing to connect.
	Security cover arrangements: The costs of posting security are greater for smaller / newer generators without adequate credit rating or payment history, as they are afforded less credit cover. We consider this approach to be appropriate to offer protection to TNUoS charge payers and consumers.
Post-commissioning generation (Chapter 6)	Unpredictable future fuel / wholesale prices: This is unlikely to be a reason why generators cannot move to a four-year commitment.
	Inability to project asset health: We acknowledge the argument that where plant is approaching the end of its life, it may not be able to give four-year user commitment as decisions on whether to remain open are based on asset health as well as forward price spreads.
	Regulatory impacts: We acknowledge that a number of developing policies, particularly elements of Electricity Market Reform are likely to have an impact on generators' decisions on whether and how long to remain operational, which may make providing four-year user commitment at the current time difficult.
Transmission Owners (Chapter 7)	Impact on efficient transmission investment: We acknowledge the value to National Grid and ultimately consumers of a longer notice period in lowering the risk of investment being inefficiently incurred although we welcome further information and analysis to support this view.

Different treatment for pre and post-commissioning generation

4.7. We are pleased to see the level of consideration given by the workgroup to the issue of discrimination, particularly in the way liabilities for wider works are applied to pre and post-commissioning generators. As outlined in Chapter 1, National Grid has a licence obligation not to “discriminate between persons or classes of persons for the purpose of connection to the National Electricity System”²⁶. In understanding the impact of this licence obligation, it is important to understand the distinction between due and undue discrimination.

4.8. We understand the argument presented by the proposer that signals received from pre and post-commissioning generation are equally important in developing the network efficiently, and are grateful to the Workgroup for presenting us with the option to treat them both the same through placing either four-year or two-year user commitments on each. However, we consider there are a number of arguments why it would not be discriminatory to treat them the same, for example:

- It is not necessarily the case that user commitment signals from pre and post-commissioning generators will have the same impact on network

²⁶ Standard licence condition C7: Prohibition on discriminating between users

planning. For a new generator, user commitment is the only signal available to the TOs of their intention to connect. There are a number of other signals available to the TOs that would indicate whether a generator is likely to reduce its TEC or close - for example, its levels of operation may be decreasing or it may be approaching the end of its asset life.

- The time horizons over which decisions to invest in new plant or to continue operating existing plant differ significantly. As we outline in Chapter 6, it may be difficult to decide whether to continue operating a particular plant over a four year period due to uncertainty over its continued ability to operate, changes in regulatory policy or future fluctuations in fuel / wholesale electricity prices.

4.9. For the reasons outlined above, we are of the view that arrangements which allows for different user commitment periods for wider works on pre and post-commissioning generators would not be discriminatory.

Environmental impact of the proposals

4.10. Pursuant to section 5(2) of the Utilities Act 2000, we are required to undertake an assessment of the impact on the environment of the decision being considered. This section sets out an assessment of the environmental impact of the proposed amendment and its alternatives.

4.11. The extent of the environmental impact of CMP 192 will be determined by its potential to have an impact on generation within Great Britain. This could be in two ways: firstly, through increasing or reducing the rate at which new generation connects to the transmission system; secondly, through existing generation opting to reduce TEC rather than assume the new liabilities.

4.12. As we outline in Chapter 5, we consider CMP 192 would reduce barriers to entry through significantly reducing the level of security required of new generation. Since the majority of the generators awaiting connection are renewable or low carbon (as illustrated in Figure 7 in Chapter 6), changes which encourage new entrants into the market is likely to reduce CO₂ emissions.

4.13. Also, we consider it unlikely that CMP 192 would result in any post-commissioning plant closing earlier than would otherwise be the case. Even if a plant were to close early as a result of the introduction of CMP 192, the environmental impact in the form of CO₂ emissions would depend on whether the generation source that takes its place has greater or lower carbon intensity. CMP 192 has the potential to encourage thermal plant, with a relatively high carbon intensity, to close rather than risk uncertainty in future fuel / wholesale electricity prices over a four year period.

4.14. We acknowledge that there is a risk that under the four-year user commitment regime for post-commissioning generators outlined in the original proposal, there is a chance that owners of a plant approaching the end of its life may

choose to close rather than assume a four-year user commitment period when there is a chance their plant may not remain operational for four years. Nuclear plants are most susceptible to this risk due to the extremely high regulatory and financial hurdles associated with extending plant once assets begin to deteriorate. To demonstrate the potential effect on CO₂, we have modelled the impact of one nuclear plant closing one year early.

4.15. More specifically, we have modelled two scenarios where the annual electricity generation of the nuclear plant is replaced by either a coal or a Combined Cycle Gas Turbine (CCGT) plant. We acknowledge that this is a conservative approach as the shortfall will likely be filled by a mix of plants that are different in type (coal vs CCGT), technology and efficiency.

4.16. For the purpose of this analysis, we compared baseload plants with similar characteristics (eg generation capacity of 1200MW, availability factor of 80%, and load factor of 60%) and assumed the carbon intensity to be 0.34tCO₂/MWh for a coal plant, 0.19tCO₂/MWh for a CCGT and zero for a nuclear plant. A nuclear plant with these characteristics would produce around 5TW of electricity per year with no carbon emissions. If the same generation is to be replaced by a traditional thermal plant, carbon emissions would range between 1 and 1.8 million tons of CO₂ per year depending whether it is a coal or CCGT plant that takes its place in the merit order.

4.17. While such a scenario might theoretically happen in the future, we consider this very unlikely because the closure of a nuclear plant requires a long process that needs to be planned well in advance. In this case, there would be enough time for new (and most likely low carbon) generation to be commissioned.

Risks to health and safety

4.18. The statutory framework within which we operate includes a requirement for us to undertake an assessment of the impact of any proposal on health and safety. We have not identified any impacts on health and safety from CMP 192.

Unintended consequences and perverse incentives

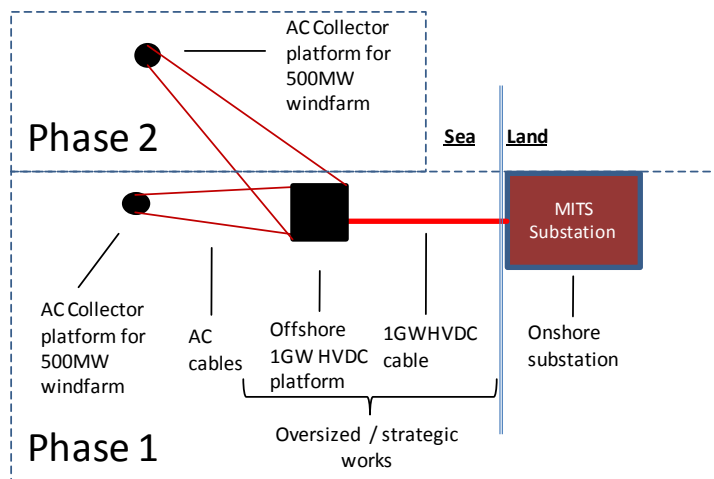
4.19. A key principle of CMP 192 is that liabilities are not intended to indemnify against underutilisation of assets already constructed. As such the liability of local works disappears once construction of those works has completed. Where local works are sized to facilitate future generation, this could incentivise generators to propose connection dates in a way that reduces their liability. Additionally, where local works are phased it could result in an inappropriate level of risk being placed on wider TNUoS payers, including consumers. To investigate this further we present a worked example of a two phase approach to connecting two offshore wind farms, where phase one includes a level of anticipatory work.

4.20. The number of connections made offshore is expected to grow significantly over the coming years and there are likely to be a number of cases where it will be

efficient to construct local works such that there will be excess capacity in the short term in anticipation of additional generation connecting at a future date. Below we illustrate a scenario, through which two 500MW offshore wind farms are connected via the same offshore HVDC platform and through the same HVDC cable. To inform the assessment we have taken a two phased example:

- **Phase 1:** The first generator (G1) connects; in anticipation of additional generation connecting at some point in the future the HVDC platform and cable are oversized by 500MW.
- **Phase 2:** The second generator (G2) connects; as the HVDC cable and offshore hub have been oversized the only works required to facilitate this connection are the AC cables and the AC collector platform.

Figure 6 - Illustration of phased delivery example



4.21. TNEI energy consultants²⁷ have provided us with sample capital costs for the equipment illustrated above along with an approximate profile of how this capex would be incurred. Based on this information we have modelled the local liabilities that each of the generators would face (in both cases when liabilities are calculated based on actual or fixed costs),²⁸ and the residual liability that would be faced by other TNUoS payers. As the graphs below illustrate the timing of Generator 2's connection has a considerable impact on the liabilities they face and as a result the residual liabilities that are placed on the wider TNUoS paying community.

²⁷ For TNEI's report, please see footnote 14.

²⁸ See Stage 06: Final CUSC Modification Report Vol.1, page. 81

Figure 7 - Liabilities when G2 commences sole use works in the last year of shared transmission works (£m)

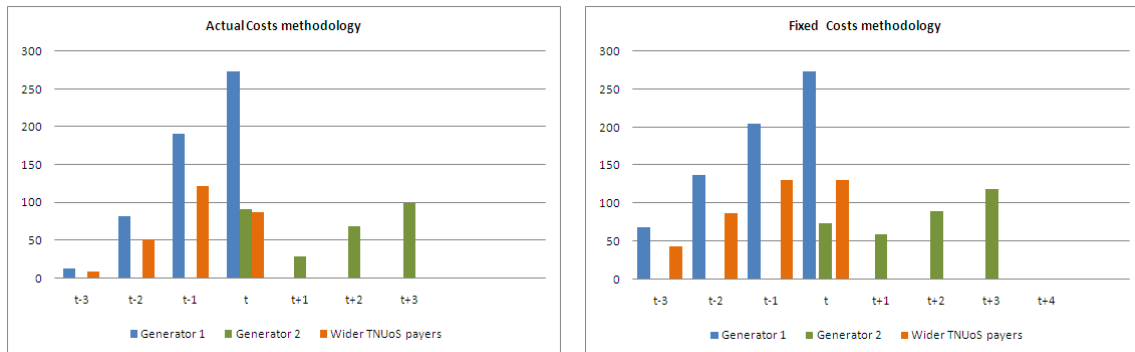
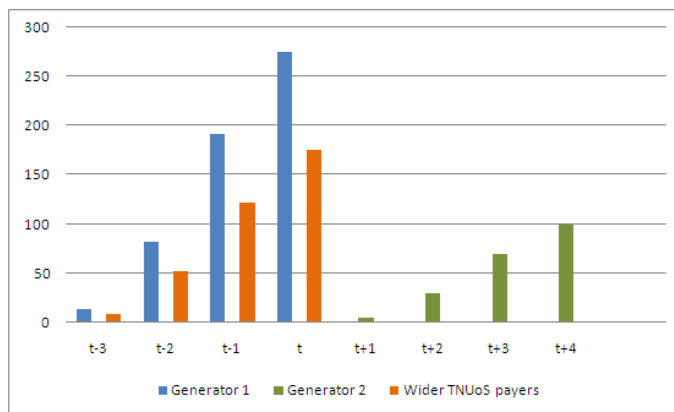


Figure 8 - Liabilities when G2 commences sole use works 1 year after completion of shared transmission works (£m)



4.22. As the graphs illustrate, where a generator is planning to connect within four years of the anticipatory works completing, they will assume a liability for these works in the early stage of their cost reflective liability period (four years prior to connection). This liability would then fall away once the anticipatory works complete. This could have a number of undesirable results:

- A generator could decide to defer its connection date until four years after the anticipatory investment is completed to avoid assuming a local liability for the works in the early years of their cost-reflective liability period.
- Where a generator is aware that their local liability is going to drop due to the completion of anticipatory works from which it will benefit, there is an incentive for it to delay informing the SO of any TEC reduction until these works are complete.

5. Impact of the proposals on pre-commissioning generation

Chapter Summary

This chapter presents for comment our assessment of the impacts of CMP 192 and variants on pre-commissioning generators. Specifically, we examine the relative difference between CMP 192 and the existing interim arrangements, present our detailed view of the alternatives proposed with respect to pre-commissioning generation and consult on our view that the existing security cover arrangements do not unduly discriminate against smaller generator.

Question 4: Do stakeholders agree with our summary of the impact of the CMP 192 original proposal on pre-commissioning generation?

Question 5: Do stakeholders agree with our current thinking that placing a four-year liability for wider works on pre-commissioning generators is appropriate?

Question 6: Do stakeholders agree with our view that the proposal to halve the liability on generators for local works that are designed to accommodate demand, either existing or in the future is not appropriate for the reasons set out in this chapter?

Question 7: Do stakeholders agree with our view that the proposed credit cover arrangements are appropriate and provide valuable protection to consumers?

5.1. As illustrated in the table below, at an aggregate level the liabilities placed on pre-commissioning generators under CMP 192 will change little from those currently in place under IGUC and Final Sums.

Table 3 - Pre-commissioning liabilities: CMP 192 and existing arrangements

		Liabilities (2011)
Interim	Final Sums	£285m
	IGUC	£225m
	Total	£510m
CMP 192	Local Liabilities	£432m
	Wider Liabilities	£43m
	Total	£475m

5.2. Due to differences between CMP 192 and these two interim approaches, the liabilities placed on individual generators could change significantly. We note that the liabilities placed on an individual generator would have to increase significantly (more than double for a generator in advance of obtaining consents, or increase by a

factor of 10 for a generator post-consents) for the generator to not realise a reduced security requirement under CMP 192. In general the security requirements placed on pre-commissioning generators should reduce dramatically under CMP 192.

5.3. It is not necessarily appropriate to simply compare the liabilities placed on generation under the existing interim arrangements and under CMP 192 as the liabilities are not intended to cover the same works. The table below summarises the portion of local and wider works secured under each approach.

Table 4 -Local and wider works secured under interim arrangements and CMP 192

	Portion of works securitised	
	Local	Wider
IGUC²⁹	50%	50%
Final Sums	100%	0%
CMP 192³⁰	Approx 66%	33%

5.1. Due to the differences between the level of liability assumed between the existing interim methodologies and CMP 192, a number of generators will see increased liabilities under CMP 192, whilst another set will see decreased liabilities. A summary of the impacts can be found in Table 5.

Quantitative assessment of the original proposal

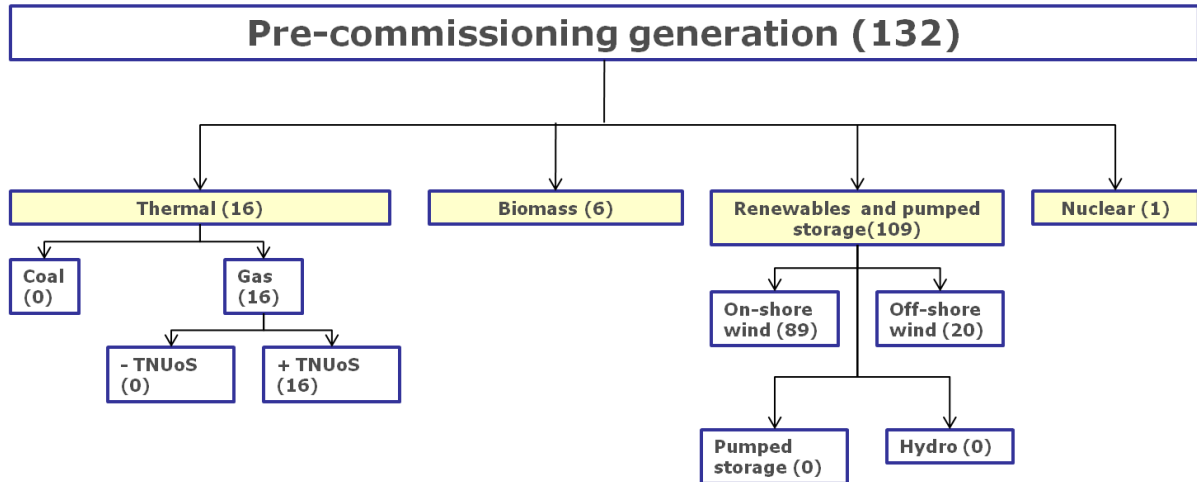
5.2. To further assess these impacts we have compared the liabilities and securities under CMP 192 with those derived under the existing arrangements for a sub-set of the existing list of pre-commissioning generation.

5.3. As a starting point we have taken the pre-commissioning generators presented in National Grid’s 2011 SYS. The key characteristics of these are summarised below:

²⁹ TNUOs based methodology designed to secure 50%of local and wider on average.

³⁰ Wider and local works have been reduced by an asset reuse factor. The asset reuse factor for local works is specific to the project, so could vary between 0% and 100%. In general though it is expected to reflect the global asset reuse factor.

Figure 7 - Set of pre-commissioning generation detailed in SYS Statement 2011



5.4. Renewable generation, particularly wind, constitutes the majority of the current pre-commissioning plant by number, with 89 onshore wind plants due to be commissioned in the next 5 years. Though smaller in number the 20 signed connection agreements for offshore wind generation would deliver the same increase in generation capacity (5GW).

5.5. The largest increase in generation capacity is set to come from the 12.5GW of thermal generation, mainly CCGT plants with agreements to connect over the coming years. The nuclear plant currently with a pre-commissioning liability is an extension of the capacity of an existing plant.

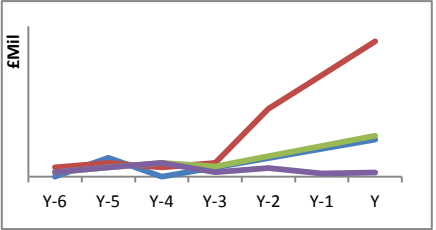
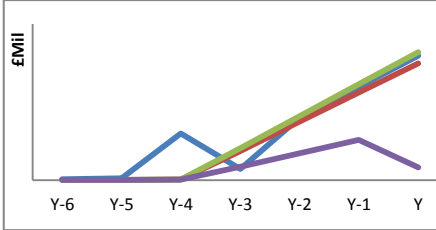
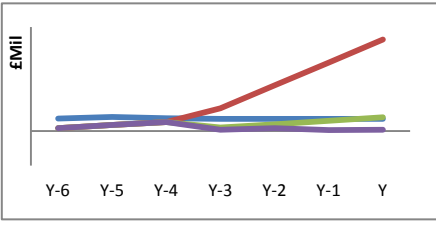
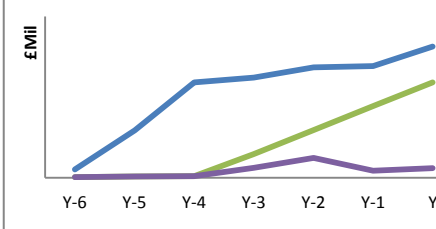
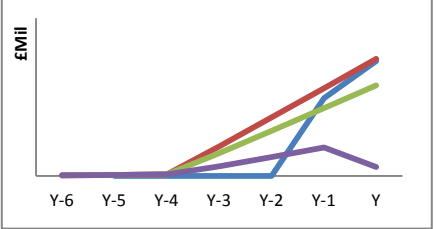
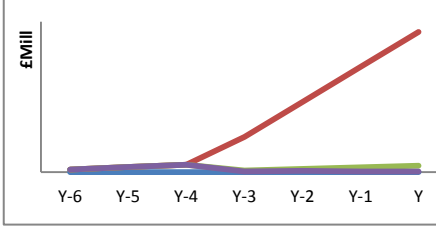
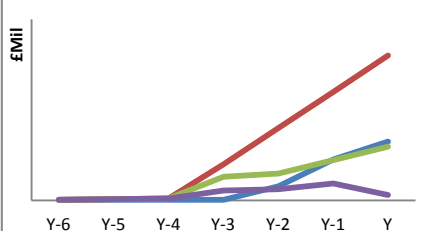
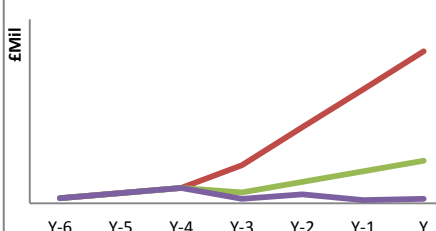
5.6. We consider the major impacts of the CMP 192 proposals on pre-commissioning generation to be -

- A reduction in security requirements for all generators.
- Liabilities will be slightly larger for generators located far from the main transmission system than they could secure under IGUC.³¹
- Liabilities for generation located close the transmission network will reduce as compared to IGUC.
- Liabilities for generators located in negative TNUoS zones currently under IGUC are likely to increase.

³¹ The main reason for this being that IGUCM approximates to secure 50% of local works whereas CMP 192 secures around 66% of this work – 100% less an asset re-use factor.

Impact Assessment on National Grid Proposal CMP 192 – Arrangements for Enduring Generation User Commitment

Table 5 Comparison of liabilities / securities under existing arrangements and CMP 192

Generation Type	TNUoS Charge	Nearest MITS	Liabilities / Securities profile	Generation Type	TNUoS Charge	Nearest MITS	Liabilities / Securities profile
Peak CCGT	Medium	15 km		Onshore Island	High	150 km	
Baseload CCGT	Medium	Less than 5 km		Offshore	Medium	Between 15 and 20 km	
Small Onshore	High	5 km		Small Biomass	Medium	Less than 5 km	
Small Onshore	High	Less than 5 km		Embedded Biomass	Low	Less than 5 km	

— Final Sums
 — IGUCM
 — CMP 192
 — CMP 192 Securities

The impact of the proposed variants on pre-commissioning generation

5.7. Each of the three areas in which variants to the CMP 192 have been proposed would have an impact pre-commissioning generation. Below we present for consultation our view of these proposals.

Proposal to reduce the four-year liability period for wider works to two-year for pre-commissioning generators

5.8. Through this proposal, pre-commissioning generators would only assume a liability for wider works two years from commissioning, as opposed to four years before commissioning as per the original proposal. The four-year liability for local works would remain. We note that this would reduce the level of liability placed on a pre-commissioning generator three and four years prior to commissioning.

5.9. We consider there to be a number of reasons why placing a four year liability for wider works on pre-commissioning generators is appropriate -

- A four-year liability period for local works would align with the typical TO capital expenditure profiles for such work.
- The magnitude of the local liability is far greater than that of the wider liability, by a factor of almost 10.³² Shortening the duration of the wider works liability to two-years is likely to have little material impact on liabilities 3 to 4 years prior to connection.
- In addition, for reasons outlined in Chapter 4, we do not consider it unduly discriminatory to impose different periods of liability for wider works on pre and post-commissioning generators.

Sharing of local works equally with demand where they are designed to accommodate demand, either existing or in the future

5.10. Under this proposal the local liability placed on generators for local assets designed to accommodate demand either upon completion or in the future would be halved. Where this is the case, it would significantly reduce the local liabilities placed on generators.

5.11. We understand this alternative was proposed to address concerns that, in some instances, particularly connections to islands, the magnitude of the local works is significant and a portion of these works could be considered to supply demand. We do not, however, consider the proposal to halve a generator's share for local works

³² See Table 3 in Chapter 3.

where they are designed to or could accommodate demand, to be appropriate for the following reasons -

- We note that in almost all such cases the portion of the local works that are designed to accommodate demand is likely to be significantly less than 50%.
- The wording of this alternative is extremely broad. As such, it could be interpreted in a number of ways, and potentially be subject to gaming by generators attempting to halve their local liabilities through demonstrating that a portion of their local works accommodate demand. We consider its approval would expose TNUoS payers and consumers to an additional and disproportionate risk.
- In principle, we do not consider there to be anything wrong with an appropriate portion of the liabilities for local work being shared with demand. However, we consider this proposal to be too broad and insufficiently developed.

“Grandfathering”

5.12. We consider a stable regulatory climate important in attracting required investment in an efficient manner. We note that stable and predictable user commitment liabilities are important for investors, and in principle we understand the argument for allowing generators to “grandfather” their existing arrangements.

5.13. However, we consider that implementing three user commitment regimes (IGUC, FSL and CMP 192) in parallel would place additional operational burden and cost on National Grid. We also consider that there are a number of questions around the detail of grandfathering that have not been addressed in the original proposal, for example, whether a generator who modifies their connection agreement (either the TEC requirement or the date) retains a right to grandfather on their original terms. We note that the option to post lower security proposed under CMP192 compared to the existing arrangements might encourage parties not to choose to grandfather their current arrangements. In light of the above concerns, and our consideration that generators are likely to benefit from CMP 192 through reduced securities, we currently consider introducing grandfathering arrangements would not be proportionate.

The impact of the CUSC security arrangements on smaller generators

5.14. A number of parties have presented the argument that the existing arrangements unduly discriminate against smaller parties, citing the fact that National Grid in its role as SO allow companies a credit allowance to cover some or all of their security requirements, based on a combination of the company’s credit rating and their history of making prompt payments. The magnitude of the allowance

drops steadily from around £100m where the company has an AAA/AA rating³³ to around £0.5m where companies have a sub-investment grade credit rating or only a small short history of making prompt payments. Companies with no repayment history or credit rating are not afforded any credit allowance. Any residual securities need to be covered through one of the following -

- A Qualifying Guarantee from an entity with a credit rating of BB- or above.
- A letter of credit from a bank.
- Cash deposited in an Escrow account.

5.15. We acknowledge that there is a cost associated with posting these residual securities, be it the financial and opportunity cost of having to post credit, or the terms a larger company may require in order to post a qualifying guarantee. We understand there are a number of cases where smaller generators are having to secure letters of credit against personal assets and are having to consider selling a share of the business to a larger party in return for a Qualifying Guarantee.

5.16. The proposal to set security requirements at a percentage of the liability reflective of the likelihood of National Grid being required to draw-down on these liabilities should benefit these generators significantly.

5.17. We consider the differentiation in the existing credit cover arrangements on the basis of a company's credit rating provides valuable protection to consumers against the risk of a generator defaulting and do not consider them to be discriminatory.

³³ As assessed by Standard and Poor

6. Impact of the proposals on post-commissioning generation

Chapter Summary

This chapter presents for comment our assessment of the impact of CMP 192 and variants on post-commissioning generators. Specifically, we examine whether uncertainty over fuel and wholesale electricity prices, the longevity of generation assets approaching the end of their life and ongoing regulatory and market changes are likely to prevent post-commissioning generators from providing four year user commitment.

Questions 8: We seek stakeholder views on the extent to which asset health and the associated plant life assessment could hinder generators in providing four-year user commitment notice.

Question 9: We would be interested to hear stakeholders views on whether we have appropriately identified all the relevant interactions with other policy developments, and potential impacts on user commitment arrangements in general and more specifically, our consideration of CMP 192 proposal.

Questions 10: Do stakeholders consider that a level of uncertainty associated with policies currently being developed in greater detail could hinder generators in providing four-year user commitment notice.

6.1. In total the liabilities assumed by post-commissioning generation under CMP 192 would be around 60% of the sum of the existing TNUoS based TEC reduction charges, as illustrated below:

Table 6 - Comparison of post-commissioning generator liabilities under current arrangements and CMP 192

	Total
Cancelation amount under CMP 192	£217m
Current TNUoS based TEC reduction charge	£381m

6.2. The most significant change for post-commissioning generators introduced under the original CMP 192 proposal is to significantly increase the amount of notice a generator will be required to give of disconnection or TEC reduction in order to avoid this liability from 1 year and 5 days to 4 years. National Grid propose that aligning the liability period with the average investment period for wider transmission projects would reduce the likelihood of inefficient transmission investment by providing more timely signals of when and where to invest in new transmission infrastructure.

6.3. Generators have presented a number of arguments as to why it would not be possible for them to give four years' notice of TEC reduction or closure.

- *Lack of a forward market in wholesale energy prices:* Generators considered the lack of liquidity in the market beyond the short term would prevent marginal plant from making an informed decision on whether it would be economical to remain open.
- *Closure decisions driven by asset health:* Some plant (particularly nuclear generation) present the argument that decisions on how long to remain operational are based on regular assessments of asset health (e.g. reactor elements). Consequently they state that they are not likely to be able to give four years' notice of closure.
- *Regulatory uncertainty:* A number of generators have stated that they will not be able to commit to four years' user commitment until a number of areas of regulatory uncertainty have been resolved (particularly the nature of the capacity mechanism and the level of the carbon floor price proposed under EMR).

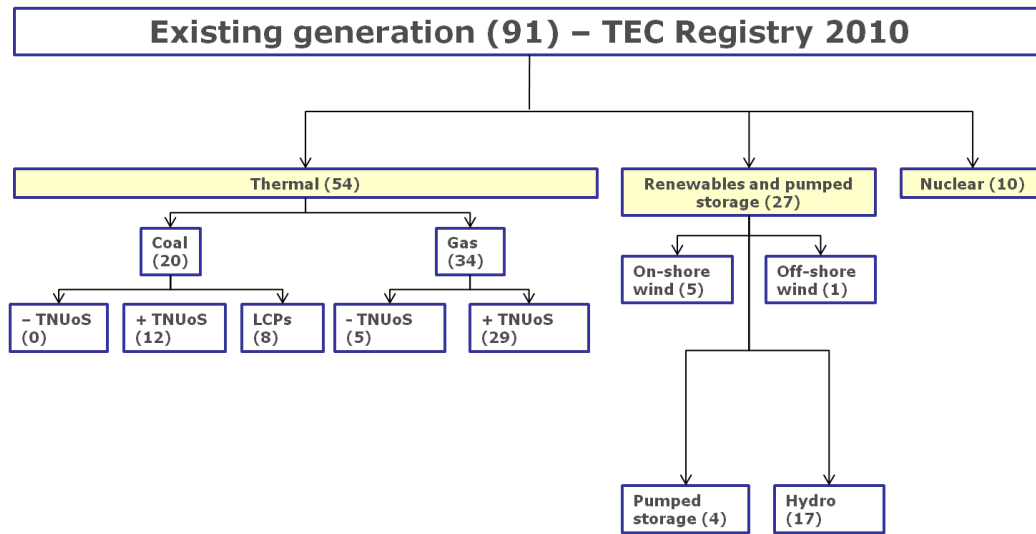
6.4. We present these our assessment of these arguments for comment below.

The impact of unpredictability in future fuel and wholesale prices

6.5. We have modelled the decision making process for a number of plants in order to assess the argument presented by generators that a lack of medium-term liquidity in the wholesale electricity market means they would not be able to project whether they would still want to operate, and hence purchase transmission access rights in four years' time.

6.6. In order to select the plant, we have classified the generators in three main groups according to the type of generation technology used: thermal (gas and coal); renewables and pumped storage; and nuclear. The figure below presents the portfolio of existing plants:

Figure 8 – Post-commissioning generation



6.7. We do not consider it necessary or appropriate to assess the impact of unpredictable prices in the fuel / wholesale electricity market for Nuclear, Renewable, pumped storage and LCPD generators on CMP 192 for the following reasons:

- **Renewable generation** is highly capital intensive and not exposed to fluctuating fuel prices.
- **Pumped Storage** plant are not exposed to volatility in fuel prices. Their economic viability is based on there continuing to be a sufficiently large spread between low and high wholesale electricity prices.
- **Nuclear generation** – We have not modelled the impact of fuel price volatility for existing nuclear generation as the marginal costs of nuclear generation are low. We do acknowledge the arguments that nuclear plant may not be able to give 4 years’ notice of closure or TEC reduction as these decisions are likely to be based on assessments of asset health. This is discussed in more detail further in this section.
- **LCP** – We did not consider it necessary to model the impact of CMP 192 on LCPs as their decision to de-commission will depend on their compliance with the Large Combustion Plant Directive, where a closure date for these plants is set at 31 December 2015. Generators have been asked to make decisions on opting in or out the regimes envisaged in the Directive in January 2008.

6.8. Our analysis therefore focussed on the remaining thermal generation. We selected a subset that we considered most likely to have their closure decision impacted by CMP 192. In selecting these plant we considered the following criteria:

- **Age of the power plant** – Plants approaching the end of their life are generally more likely to reduce their TEC or close.

- **Load factor** – Plants that have historically run at a high load factor but have been decreasing their output over the years to be generally more likely to reduce their TEC or close.
- **Zones** – The transition from the current TEC reduction charge based on TNUoS to the CMP 192 arrangements would be most marked for generation in negative TNUoS zones.

6.9. In undertaking this analysis we have further enhanced the model presented by the proposer in the CUSC Modification Report³⁴. Through this approach generators are modelled as “call” options. The value of the call option determined by its duration, its cost (in the form of TNUoS charges and user commitment levels), and the prices / volatility in the markets the call option operates in. The volatility in the market is modelled by iterating 500 times through randomly generated market data about a central point within a predefined bandwidth and calculating the average impact that CMP 192 would have on the value of the generator as a call option as compared to the existing 1 year and 5 days user commitment arrangements. The approach, along with the assumptions made and inputs used are described in Appendix 4.

6.10. The impact of both the original CMP 192 proposal (four-year user commitment) and the two-year user commitment alternative were modelled. The results of the analysis are outlined below:

Table 7 - Relative impact of CMP 192 and alternative proposal to place two years commitment on post commissioning generators on option value of generator as compared to status quo

Gen Type	Capacity	TNUoS Zone	Original	Two-year alternative
CCGT	small	med	minimal	minimal
CCGT	large	high	minimal	nil
CCGT	medium	low	minimal	nil
CCGT	large	low	minimal	nil
Coal	large	low	minimal	nil
Coal	large	med	minimal	nil
Coal	large	med	minimal	nil

6.11. The exact details of the generators modelled and the financial impact of CMP 192 have not been included for reasons of confidentiality. In general however, we can conclude the following:

- **Unpredictability in the fuel and wholesale markets over four years is likely to have only a minimal effect on plant closure decisions:** For all generators modelled, CMP 192 would not affect the value of the generator significantly.³⁵

³⁴ See Stage 6: Final CUSC Modification Report Vol 1, Annex 6

³⁵ The maximum estimated impact is under £50k.



- **Two years user commitment** – Transitioning to a two-year user commitment period would have practically no effect on generator closure decisions as compared to the status quo.

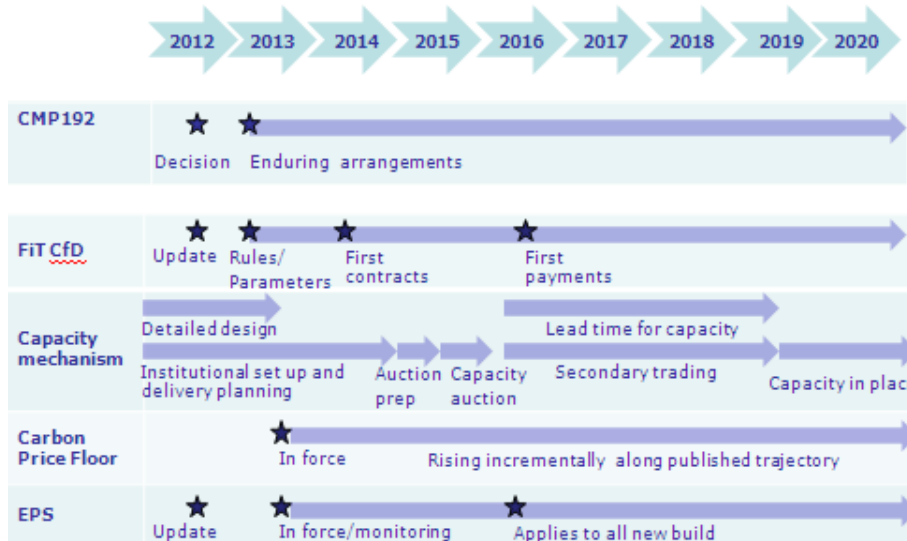
Closure decisions driven by asset health

6.12. A number of parties have presented the argument that as a generator approaches the end of its life, decisions over whether to and for how long to continue operating are likely to be based on the health and remaining life of the generation assets as much as the economics of the projected fuel price spreads. We note that an assessment of these assets, and the consequent decisions over how long to extend the plant life can often only be made during routine outages, which we understand is unlikely to provide four years notice of closure. We understand that these concerns are present within the existing fleet of nuclear generation, where core components are prohibitively expensive or impossible to replace.

Impacts of regulatory uncertainty

6.13. A number of stakeholders have presented the view that there currently exists a significant amount of regulatory uncertainty, particularly as we move to the arrangements being introduced under the Electricity Market Reform (EMR). Below we present an overview of current regulatory and governmental developments and present our view on how they interact with CMP 192. The table below outlines the timeline for the developing policies which are discussed in further detail below:

Figure 9 - Policy developments with the potential to impact investment decisions



Electricity Market Reform (EMR)

6.14. The EMR is a DECC led project looking to decarbonise the GB generation mix, to deliver renewable energy targets, whilst maintaining secure and affordable electricity supplies. DECC first consulted on the proposals in December 2010.³⁶ Broader reforms to the electricity market proposed in DECC's consultation build on the Chancellor's announcement to introduce a carbon price support mechanism.³⁷ Improved liquidity, an initiative which Ofgem is currently leading on, is also important complement to the EMR. The four elements of the EMR are set out below:

6.15. **Feed-in Tariffs:** Long term contracts to provide more certainty on the revenue for future low carbon generation, making it a more attractive investment. A Contract for Difference (CfD) model is proposed where the strike price, the amount generators are 'topped up' (or 'clawed back') remains the same throughout the duration of the contract. The first CfDs are expected to be made available from April 2014 with the first possible payments being released in 2016. More detail on the design and technical parameters of the FiT CfDs is expected in early 2012 when DECC is expected to publish a further policy update. Government developed detailed proposals to provide new renewable generators with a period of choice between the existing Renewable Obligation (RO) and the new FiT CfDs.³⁸

6.16. **Capacity Mechanism:** targeted payments to encourage security of supply through the construction of flexible reserve plants or through demand. In its Technical Update, DECC set out its decision to implement a market-wide capacity mechanism in which all providers willing to offer reliable capacity would be provided incentives to do so. DECC set out that Ministers will take the decision on when to run the first auction process based on forecasts of security of supply. Under the current proposals, capacity could be procured if a future need is established by DECC. From 2015, DECC will have the ability to instruct the delivery organisation, the SO, to procure capacity for certain duration in the future if and when Ministers deem it necessary.

6.17. **Emissions Performance Standard (EPS):** a backstop measure to limit how much carbon the most carbon intensive power stations can emit. The proposed annual limit is meant to provide a regulatory signal on the amount of carbon new fossil-fuel power stations can emit. The regime will not be retrospective and will be subject to regular reviews as part of the process of three yearly reports on decarbonisation under the Energy Act 2010. Any changes in the level of the EPS will not apply to plant consented under the framework for a specified period. The regime will come into force once legislative change is made, which at this time is envisaged to take place during 2013.

³⁶ A copy of DECC's consultation can be found here:

<http://www.decc.gov.uk/en/content/cms/consultations/emr/emr.aspx>.

³⁷ This is specifically dealt with in Her Majesty's Treasury's (HMT)'s Carbon Price Floor (CPF) consultation published at the same time. For HMT's consultation, please see http://www.hm-treasury.gov.uk/consult_carbon_price_support.htm

³⁸ The proposals offer choice of RO or CfD between 2014 and 2017 and bridging arrangements for projects seeking CfDs support before legislation is in place (these may include early nuclear, CCS demonstration plant and round 3 offshore wind).

6.18. **Carbon Price Floor (CPF):** aimed at providing greater long-term certainty around the additional cost of running polluting plant. CPF would top up the EU Emissions Trading System (EU ETS) carbon price to a target level for the electricity generation sector. The Chancellor announced in the Budget 2011 the introduction of a CPF from 1 April 2013 and would be achieved by Her Majesty's Treasury imposing a tax from 2013 on emissions that would 'top up' the current CO2 price to a specified level. This would be set annually and would progressively converge with the Government's long term price trajectory. Government intends to announce the future rates at subsequent Budgets depending on the prevailing carbon price. The rates will be set two years in advance.

6.19. We consider any of the above measures could conceivably affect the impact of the CMP 192 proposals by affecting the marginal cost of plant and the overall generation mix, and ultimately the individual plant's profitability assessment including the plant hedging strategy and the corresponding running and potential closure. However, we do not have sufficient detail at this stage to consider this interaction between the CMP 192 proposals and EMR. Moreover, varying degrees of development and the implementation schedule of the proposals is another factor that complicates the assessment of these interactions.

Retail Market Review (RMR) and the Liquidity proposals

6.20. The Retail Market Review (RMR) is Ofgem's investigation into the markets for electricity and gas for households and small businesses. RMR findings and initial proposals were published in March 2011.³⁹ One of the RMR proposals addresses continued concerns that low liquidity⁴⁰ in the GB power market is a barrier to entry and growth. New entrants and existing independent market players require a liquid electricity market to compete against existing firms and to encourage competition between vertically-integrated players.

6.21. We therefore proposed putting in place a Mandatory Auction (MA) and Mandatory Market Making (MMM) obligation. The MA would require the Big 6 to make available between 10% and 20% of their power generation into the market through a regular auction – potentially in longer-dated products along the curve. This would help create robust reference prices and improve product availability for independent market participants. In addition, the MMM obligation would require the establishment of arrangements to ensure that market participants are able to trade continuously and mitigate imbalance risks.⁴¹ Ofgem's liquidity proposals could also potentially affect the impact of the CMP 192 proposals. During the CMP 192 Workgroup meetings it was noted that decision regarding closure of a post-commissioning plant, would amongst other factors depend on expected future electricity prices or spreads. It was further noted that the forward electricity price curve does not go out further

³⁹ <http://www.ofgem.gov.uk/Markets/RetMkts/rmr/Pages/rmr.aspx>

⁴⁰ Of particular concern is the low levels of liquidity in the forward markets i.e. buying and selling for delivery of electricity in the month ahead and after, which include trades in months, seasons and years ahead of delivery.

⁴¹ For more detail on the MA and MMM proposals please see Appendix 7 – Ongoing liquidity findings and liquidity proposals, of the RMR:
http://www.ofgem.gov.uk/Markets/RetMkts/rmr/Documents1/RMR_Appendices.pdf

than two years and that the maximum closure notice a generator would be able to give based on this information would thus be two years.

6.22. Our recent RMR update⁴² confirmed that we were continuing to develop our MA and MMM proposals. Therefore, the MMM proposal would intervene in the near-term market whilst the MA would look to improve liquidity in the longer term although this may not go as far as four years out. Our next publication on the Liquidity work is due in early 2012. We will seek to take account of liquidity developments when we consider responses to this impact assessment.

⁴² Ofgem's Retail Market Review-update and next steps (liquidity proposals) is available at: http://www.ofgem.gov.uk/Markets/RetMkts/rmr/Documents1/Liquidity_Annex%20One_Open%20letter.pdf

7. Impact of the proposals on network planning

Chapter Summary

This chapter presents for comment National Grid's assessment of the benefits of placing four-year user commitment on post-commissioning generators in terms of more efficient and less risky network investment.

Question 11: We welcome stakeholders' views on the analysis presented in this section and, where available, any additional information and/or analysis in relation to the impact of CMP 192 on the efficiency of network investment.

Question 12: We seek stakeholders' views on the approach to risk adopted in National Grid's analysis and on the potential alternatives to assessing the risk.

Question 13: Taking into account various factors discussed in this document that may have an impact on generators' ability to provide four-year notice and National Grid's analysis presented in this chapter, we seek stakeholders' views on the most appropriate length of the notice period for post-commissioning generators.

7.1. National Grid has undertaken analysis to quantify the benefits in terms of efficient network planning and investment of placing a four-year user commitment for wider works on post-commissioning generators. The analysis shows the impact of the proposal on the efficiency of investment through the benefit of increased certainty to National Grid. When generators are in a position to communicate their planned network use and other information relevant to National Grid's investment plans over the successive years, related spend is at a lower risk of being inefficiently incurred. Tables 8 and 9 show National Grid's capital investment planned in 2011-12 and subsequent years⁴³ and annual figures for capital spend considered at risk from generator's decisions.⁴⁴

7.2. Under the current arrangements, post-commissioning generators are incentivised to provide one year and five days' notice. For the purposes of this analysis, National Grid approximated the notice period to one year. CMP 192 proposes to introduce a four-year notice period, and a two-year alternative. Using these and the data provided in Table 8 and 9, National Grid calculated the benefit of the information provided under those three scenarios, and as a percentage of that year's total capital investment spends, in Table 8.

⁴³ The analysis uses National Grid RIIO-T1 approximated data that will be submitted in March 2012. The data assumes that generators provide National Grid with the minimum amount of notice that has no liability associated with it. Although this level of notice is unlikely it is necessary to simplify the analysis.

⁴⁴ This is based on National Grid's assumption that investment tagged as being for exit is at no risk from generator decisions whilst investment tagged as entry is considered 100% at risk. The remaining capital is assumed to be 50% exposed to risk from generator decisions.

Table 8 - National Grid annual capital spend (£mill)

Year of Spend						
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Total Capex	1,024	1,377	1,841	2,140	2,113	2,161

Table 9 – National Grid capital spend at risk from generator decision by year (£mil)

		Year of Spend					
Commissioning Year	Type	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
2011	Entry	68	13	4	1	6	3
	Shared	28	3	4	0	0	0
	Total	97	16	7	1	6	3
2012	Entry	57	79	24	2	2	1
	Shared	85	39	5	1	0	0
	Total	141	118	29	3	2	1
2013	Entry	64	114	126	20	17	5
	Shared	45	57	35	5	8	3
	Total	109	171	161	25	25	7
2014	Entry	49	94	112	61	22	22
	Shared	33	48	73	46	13	5
	Total	81	142	185	107	35	27
2015	Entry	66	200	434	546	313	106
	Shared	14	20	33	45	22	8
	Total	80	220	467	591	334	114
2016	Entry	12	31	89	145	158	129
	Shared	27	37	29	25	32	24
	Total	40	68	118	170	190	153
2017	Entry	31	55	89	180	317	364
	Shared	54	99	127	157	167	175
	Total	85	154	216	338	484	539
2018	Entry	5	25	85	174	239	304
	Shared	11	15	26	32	51	69
	Total	16	40	111	205	290	373
2019	Entry	2	2	6	22	30	100
	Shared	3	1	4	18	24	28
	Total	5	3	10	40	54	128
Total at Risk		653	931	1,304	1,480	1,419	1,345

7.3. The benefits for National Grid are calculated as the amount of costs that would not be “at risk” anymore if 1, 2 or 4 years notice is provided. This is presented in Table 10 below, where the percentages represent the fraction of costs at risk out of the total capex of the year. According to this analysis developed by National Grid, the longer notice period is provided, the lower is the risk (or the higher is the benefit).

Table 10 - National Grid capital spend at risk from generator decision as percentage of total spend by year (Mil£)

Information Period	Year of Spend					
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
1 Year	97	118	161	107	334	153
	9%	9%	9%	5%	16%	7%
2 Year	238	289	346	698	524	692
	23%	21%	19%	33%	25%	32%
4 Year	428	651	931	1,206	1,298	1,193
	42%	47%	51%	56%	61%	55%

7.4. We appreciate the analysis developed by National Grid and we consider the assessment reasonable. However, we note that in the analysis the risk of an investment to not be commissioned in year t+1 has been treated in the same way as the risk of not being commissioned in, say, t+10. In other words, the analysis assumes that National Grid has no information on the likelihood of the investment being commissioned and will bear the same risk at any point in time. We feel that this would be very unlikely as National Grid would probably have a certain level of information and certainty on commissioning dates and likelihood of post-commissioning projects going ahead and would therefore be able to leverage the risk of overinvesting. If this holds true, then the analysis may overestimate the benefits associated to a longer regime.

Appendices

Index

Appendix	Name of Appendix	Page Number
1	Consultation response and questions	52
2	Legal and assessment framework	53
3	Current user commitment arrangements	58
4	Approach to modelling	61
5	Industry process	68
6	Glossary	72
7	Feedback questionnaire	76

Appendix 1 - Consultation response and questions

1.1 We would like to hear the views of interested parties in relation to any of the issues set out in this document. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.2 Responses should be received by 12 March 2012 and should be sent, preferably by e-mail, to:

Vanja Munerati
Electricity Transmission Policy
Ofgem
9 Millbank
London
SW1P 3GE

Telephone: 0207 901 7472
E-mail: Vanja.Munerati@ofgem.gov.uk

1.3 Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.4 Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.5 Any questions on this document should, in the first instance, be directed to Vanja Munerati (contact details provided above).

CHAPTER: One

There are no questions in this chapter.

CHAPTER: Two

There are no questions in this chapter.

CHAPTER: Three

There are no questions in this chapter.

CHAPTER: Four

Question 1: We welcome stakeholders' views on whether we have identified all the relevant impacts of CMP 192.

Question 2: Do stakeholders agree with our assessment of the potential environmental impacts of the proposal?

Question 3: We seek stakeholders' views on the potential implications of the potential perverse incentives, and views as to how they may be mitigated.

CHAPTER: Five

Question 4: Do stakeholders agree with our summary of the impact of the CMP 192 original proposal on pre-commissioning generation?

Question 5: Do stakeholders agree with our current thinking that placing a four-year liability for wider works on pre-commissioning generators is appropriate?

Question 6: Do stakeholders agree with our view that the proposal to halve the liability on generators for local works that are designed to accommodate demand, either existing or in the future is not appropriate for the reasons set out in this chapter?

Question 7: Do stakeholders agree with our view that the proposed credit cover arrangements are appropriate and provide valuable protection to consumers?

CHAPTER: Six

Questions 8: We seek stakeholders' views on the extent to which asset health and the associated plant life assessment could hinder generators in providing four-year user commitment notice.

Question 9: We would be interested to hear stakeholders' views on whether we have appropriately identified all the relevant interactions with other policy developments, and potential impacts on user commitment arrangements in general and more specifically, our consideration of CMP 192 proposal.

Questions 10: Do stakeholders consider that a level of uncertainty associated with policies currently being developed in greater detail could hinder generators in providing four-year user commitment notice?

CHAPTER: Seven

Question 11: We welcome stakeholders' views on the analysis presented in this section and, where available, any additional information and/or analysis in relation to the impact of CMP 192 on the efficiency of network investment.

Question 12: We seek stakeholders' views on the approach to risk adopted in National Grid's analysis and on the potential alternatives to assessing the risk.

Question 13: Taking into account various factors discussed in this document that may have an impact on generators' ability to provide four-year notice and National Grid's analysis presented in this chapter, we seek stakeholders' views on the most appropriate length of the notice period for post-commissioning generators.

Appendix 2 – Legal and assessment framework

Introduction

2.1 This appendix summarises the legal and assessment framework for amendments to the Connection and Use of System Code (CUSC). The procedure for raising changes to the CUSC (and the process followed for the CMP 192 proposal and its alternatives) is set out in Appendix 4.

2.2 After receipt of the Amendment Report, the Authority makes a decision as to whether or not to direct implementation of the proposal or any of the alternatives. It makes its decision in the context of a prescribed legal and assessment framework as set out below.

Impact assessment

2.3 Section 5A of the Utilities Act 2000 (Duty of the Authority to carry out an impact assessment) imposes a duty on the Authority to undertake an impact assessment in certain cases. Section 5A of the Utilities Act 2000 applies where:

(a) the Authority is proposing to do anything for the purposes of, or in connection with, the carrying out of any function exercisable by it under or by virtue of Part 1 of the Gas Act 1986 or the Electricity Act 1989; and

(b) it appears to the Authority that the proposal is important within the meaning set out in section 5A, but does not apply where the urgency of the matter makes it impracticable or inappropriate for the Authority to comply with the requirements of section 5A.

2.4 Where section 5A applies, before the implementation of a proposal, the Authority must either carry out and publish an impact assessment or publish a statement setting out its reasons for believing that it is unnecessary for it to undertake an impact assessment. An impact assessment must include an assessment of the likely effects on the environment of a proposal.

2.5 Section 5A(2) sets out the matters which would determine whether or not a proposal is “important” for the purposes of section 5A. These are where a proposal:

- Involves a major change in the activities carried out by the Authority;
- Has a significant impact on market participants in the gas or electricity sectors;

- Has a significant impact upon persons engaged in commercial activities connected to the gas or electricity sectors;
- Has a significant impact on the general public in GB or in a part of GB; or
- Has significant effects on the environment.

Assessment framework

2.6 The Authority will consider whether CMP 192 Proposed or any of its alternatives would better facilitate the achievement of any one or more of the applicable CUSC objectives as compared with the current provisions of the CUSC.

2.7 The CUSC objectives are as follows:

- The efficient discharge by the licensee of the obligations imposed on it under the Act and its Transmission Licence;
- 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.
- Compliance with the Regulations and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.⁴⁵

2.8 Where the Authority considers that a proposal does better facilitate the CUSC objectives, the Authority then considers whether that proposal is consistent with its statutory duties, including those arising under European law.

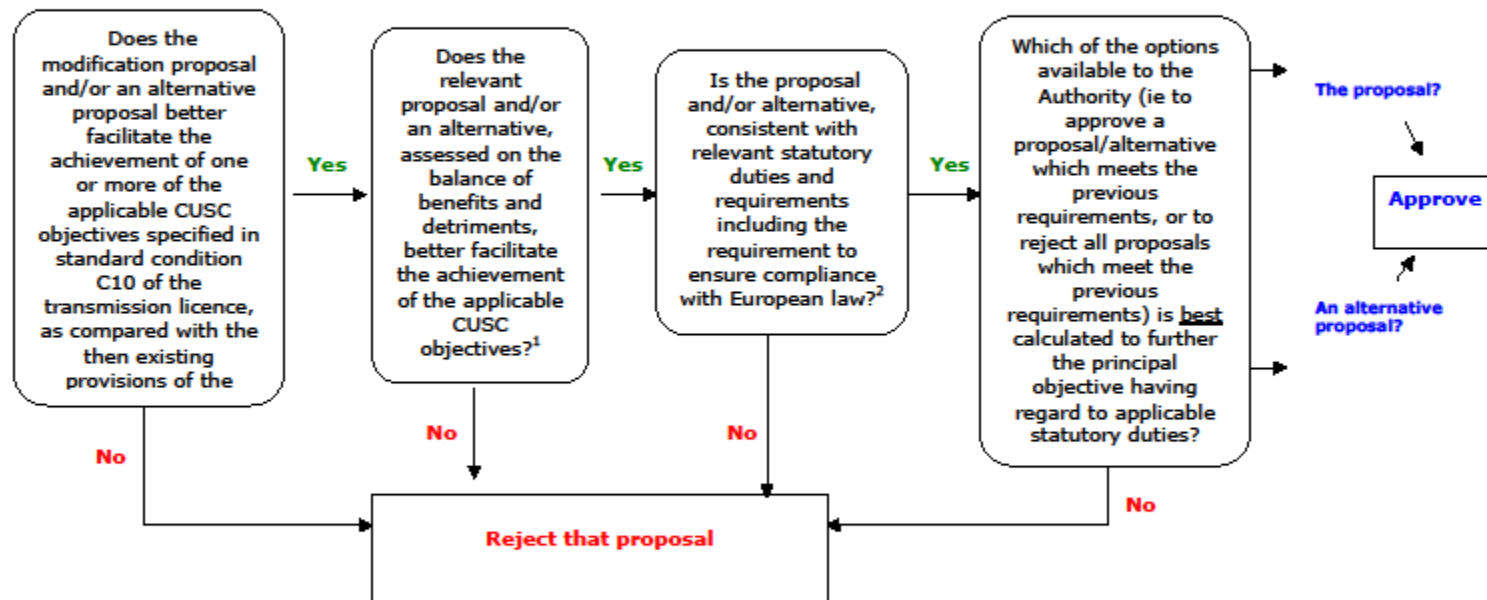
2.9 The Electricity Act 1989, as amended, sets out the Authority's duties. The Authority's principal objective is to protect the interests of existing and future consumers, wherever appropriate by promoting effective competition. Those interests of existing and future consumers are those interests taken as a whole including their interests in the reduction of electricity supply emissions of targeted greenhouse gases and their interests in the security of the supply of electricity to them. In making its decision the Authority also has regard to, amongst other things, the need to secure that all reasonable demands for electricity are met, to secure that licensees are able to fund their activities and to contribute to the achievement of sustainable development.

2.10 The Authority must also have regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice.

⁴⁵ This objective was added to the CUSC as part of the 'third package' of EU legislation.

Decision Making Framework

The decision making framework below will be used to direct how we consider the proposal and its alternatives. We first assess the proposal against each of the relevant CUSC objectives. If one or more of these is better facilitated in our option we will then consider whether on balance we believe the proposal better achieves the relevant objectives over all. If we consider the proposal, or one of its alternatives, to be positive on balance at this stage we then assess the proposal, and its alternatives against the relevant statutory duties. If a proposal, or its alternative, is considered to better facilitate these duties we will consider which of the remaining proposals or alternatives are best calculated to further the principal objective and approve or reject on that basis.



¹ There may be cases where a proposal would further the achievement of one of the applicable CUSC objectives, whilst being detrimental to an other, in which case Ofgem should assess that proposal on the balance of benefits and detriments.

² As with the applicable CUSC objectives, there may be proposals which appear to be contrary to one or more of the statutory duties, whilst furthering others. Again, in these instances it may be appropriate to apply some weighting.

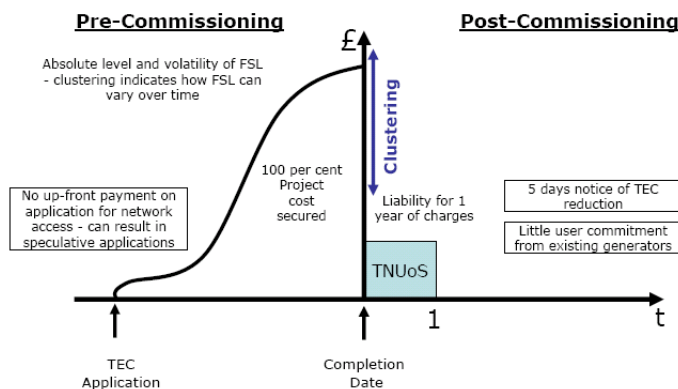
Appendix 3 – Current user commitment arrangements

Final Sums methodology

3.1 The Final Sums liability⁴⁶ is based on the costs incurred by TOs in undertaking the transmission works which turn out to be unnecessary in the event of termination. The generator underwrites the actual costs committed in order to ensure that any investment triggered by the generator is fully secured during its construction. As the methodology is based on actual costs, the risk of inefficient local investment is held by the generators with no risk for consumers. Since 2010, wider investment works security has not been required from generators under this approach.

3.2 At any point in time, the Final Sums liability is the total cost incurred by the TOs up to that point during the construction and increases over the period of construction along an 'S-curve'. Figure 3.1 below depicts the current pre and post commissioning arrangements associated with the Final Sums methodology.

Figure 3.1 - Final Sums methodology



3.3 Under the Final Sums, some projects are grouped together when identifying the reinforcement works necessary for their connection. This approach, called 'Clustering', is adopted when a number of applications for connection to the transmission system triggering common reinforcement works are being assessed at the same time. By considering the requirements of all generators together rather than individually, the securities for those works are shared between the generators.

⁴⁶ The Final Sums associated with relevant transmission reinforcement works set out in the Appendix H of the Connection Agreement.

Interim Generic User Commitment (IGUC) methodology

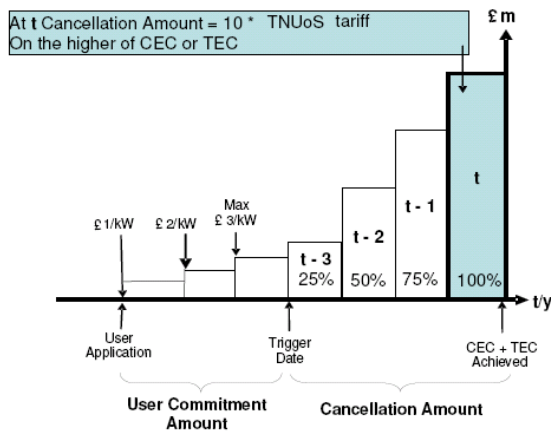
3.4 Instead of providing the actual costs of specific transmission works, a pre-commissioning generator can opt to provide a generic non refundable liability under the IGUC. This voluntary methodology calculates the liabilities on a generic basis and thus de-links the actual costs that a generator imposes on the system through triggering specific transmission investment. This alternative method of providing user commitment liability was developed following on from the work of the Access Reform Options Development Group (ARODG). ARODG was a Workgroup established and chaired by Ofgem, consisting of industry representatives to discuss and develop potential options for access reform, focusing on the arrangements for securing transmission works.

3.5 The ARODG members identified that, as generators drop out of the access queue, large liabilities can be transferred to other generators. In the case of clustered projects, when a generator that leaves the queue and is not replaced, all Final Sums liabilities are proportioned across the remaining generators. In the case of a non-clustered project, a relatively small connection can trigger the need for wider reinforcement, which that project may be unable to provide liabilities for. The IGUC methodology was thus introduced by National Grid in 2006⁴⁷ to help reduce this uncertainty and volatility of the Final Sums methodology. The IGUC arrangements were time-limited to 31 March 2011. At the same time, National Grid also reviewed user commitment and introduced a proposal, CAP 131, for enduring arrangements. This proposal is further discussed in the following section.

3.6 Generators who chose to have their liabilities under the IGUC methodology are liable for a fixed annual liability that increases annually beyond four years prior to commissioning, and is a multiple of the prevailing TNUoS charge (used as a proxy for the level of transmission investment) for the four-year period prior to commissioning. These amounts are non-refundable regardless of costs incurred or whether the assets are redundant or will be re-used. IGUC methodology covers both wider and local works. As there is no sharing of liabilities with other generators, the IGUC liability will not vary as a result of others joining or leaving a cluster. Liabilities under the IGUC methodology are depicted in the figure below:

⁴⁷ For more information, please see the Interim Generic User Commitment Methodology Statement, August 2006 available at: <http://www.nationalgrid.com/NR/rdonlyres/760388F8-7C6B-40C6-86BF-92AE523C83E1/15522/InterimGenericUserCommitmentMethodologyStatementv2.pdf>

Figure 3.2 - Interim Generic User Commitment methodology



3.7 Upon acceptance of the connection offer, a generator becomes liable for a user commitment charge. As depicted on the figure above, a generator’s liability increases annually from £1/kW by £1/kW beyond four years prior to commissioning. This continues to a maximum of £3/kW unless the project only has four years left until commissioning.

3.8 Once only four years remain until commissioning, a generator is liable for a cancellation amount which represents a proportion of the prevailing TNUoS charge (collared at £3/kW). This proportion is dependent on the number of years until their commissioning date and rises in 25% increments. Liabilities ramp up over this four year period to a total of ten times the annual TNUoS charge.⁴⁸

⁴⁸ The TNUoS multiplier used is a number determined by National Grid at the beginning of each price control period. It is set in accordance with the level of investment which needs to be covered based on the existing connection offers. The maximum TNUoS multiplier for island connections is set at six times.

Appendix 4– Approach to modelling

Introduction

4.1 As part of this Impact Assessment we have carried out a modelling exercise of the decisions generators would face if new arrangements are implemented under CMP 192.

4.2 The CUSC modification report presents an approach developed by National Grid to modelling the decision of a generator on whether or not to continue operation as call options. Each option gives the right (but not the obligation) to generate electricity by paying the necessary exercise costs at a specific time in future. The generator therefore would decide to opt for generating only if it is profitable to do so. This is explained in more detail in Annex 6 of the Final Modification Report.⁴⁹

4.3 We have adopted the same methodology, revising the inputs to align our assumptions with those of Redpoint’s work for Project TransmiT. We have modelled a representative set of generators which appear most likely to be impacted by the changes proposed under CMP 192.

4.4 The main principles of the model can be summarised as follows:

- The model is built as a call-option, where the generator can decide what to do (generate / not generate) depending on plant characteristics and market conditions.
- The model runs 500 iterations of the decision the generator would make in the four year scenario, which effectively correspond to the scenario under CMP 192.
- The generator will be better-off every time the difference between the CMP 192 regime and the current regime – measured as the difference in profits earned under the two regimes - is positive.

4.5 Section 4 of this document presents the main findings of our quantitative analysis. The following paragraphs further describe the rationale behind our modelling approach.

Model specifications

4.6 In the following paragraphs we discuss these four issues:

⁴⁹<http://www.nationalgrid.com/NR/rdonlyres/DA4EB7E8-7168-49CA-A115-81A3A5D9753/50218/CMP192finalCUSCModificationReport10.pdf>

- Assumptions on fuel prices and carbon prices
- Correlation between fuel prices and wholesale prices
- Correlation between carbon prices and wholesale prices
- Calculation of wholesale prices

4.7 We present all the assumptions on the model specifications in the following table and illustrated in the figure below and we further describe our approach in the following sections.

Table 4.1 - Summary of assumptions

	Variation within year	Base value	Bandwidth
Fuel prices	Prices kept constant within the year as no major variations observed in the past	Same assumptions used in TransmiT	EMR assumptions
Coal			
Gas			
Carbon prices			EMR assumptions with lowest value set at 2016 CO2 price as per 2011 Treasury budget
Wholesale prices (Bands)	Set looking at 2009 and 2010 prices and their distribution within a single year	Average of 2013-2016 wholesale prices as provided in TransmiT	Lowest and highest values based on distance in 2009 and 2010 of lowest and highest prices of each band from the average
Low (A)			
Base (B)			
Mid (C)			
High (D)			
Peak (E)			

4.8 Assumptions on fuel prices and carbon prices. With respect to fuel prices, for both coal and gas prices we have assumed constant prices across the year calculated as the average of annual fuel prices for the years (2013-2016). Our choice is driven by several factors, specifically:

- Coal prices are generally set through long-term contracts that tend not to vary during a given year.
- Gas prices may vary during a given year, however historical data show that only small variations occur from year to year and increasing prices are generally predictable due to seasonality of gas demand.
- More generally, we feel that fuel prices may be influenced by factors that are hard to predict and we have therefore decided to take a more conservative approach to minimise the risk of errors and inaccuracies. To this extent, we have set the bandwidth to include a broader range of potential variations in prices that may occur within the four-year period.

4.9 With respect to carbon prices, we have a carbon price calculated as the average of data from the period 2013-2016 as per assumptions in Project TransmiT. This value would approximately be equal to £20/tCO₂. However, we appreciate that a carbon floor price is due to come into force in 2013 through the EMR and prices under the 10 scenarios would need to be set to consider that floor price (set at £16/tCO₂ as per the 2011 Budget).⁵⁰ We have therefore set the bandwidth for carbon prices based on the EMR assumptions at £8/tCO₂.

4.10 The base values for fuel prices and carbon prices will be aligned with Project TransmiT. They are set at the average of forecast prices for the years 2013-2016.

4.11 Correlation between fuel prices and wholesale prices. For modelling purposes we have assumed that fuel prices and wholesale prices are not correlated. This for a number of reasons, namely:

- While we appreciate fuel prices generally account for a fairly large percentage of the operating costs (e.g. over 75% in case of gas, for example), investors and utility companies are experienced in managing fuel price uncertainty and gain a competitive advantage from their ability to manage it.
- The extent of the influence of fuel prices on wholesale prices is hard to predict in detail and therefore we have decided to adopt a conservative approach to avoid further errors and inaccuracies.

4.12 Correlation between carbon prices and wholesale prices. We have assumed carbon prices and wholesale prices are not correlated. At the moment we think carbon prices are likely to be still predominantly driven by wider regulatory uncertainties rather than by market mechanisms.

4.13 Assumptions on wholesale prices. Wholesale prices are volatile during a given year as a result of varying levels of demand for electricity and the interactions this has with generator despatch decisions. For that reason, we have developed the following approach to modelling wholesale prices to take into account their variability and seasonality:

- First, we have taken hourly wholesale prices for the year 2009 and 2010 as per the ones used in Project TransmiT, where historical power prices from the Market Index Price (MIP) have been derived from the APX half-hourly exchange.
- Second, we have then taken the highest (peak) and lowest wholesale price and set the bandwidth within which prices would vary during a given year at those levels. In the model therefore there will be 17,520 observations (corresponding to half-hourly prices) ranging from the lowest price to the peak.

⁵⁰“Carbon price floor consultation: the Government response” HM treasury March 2011, http://www.hm-treasury.gov.uk/d/carbon_price_floor_consultation_govt_response.pdf

Impact Assessment on National Grid proposal CMP192: enduring user commitment

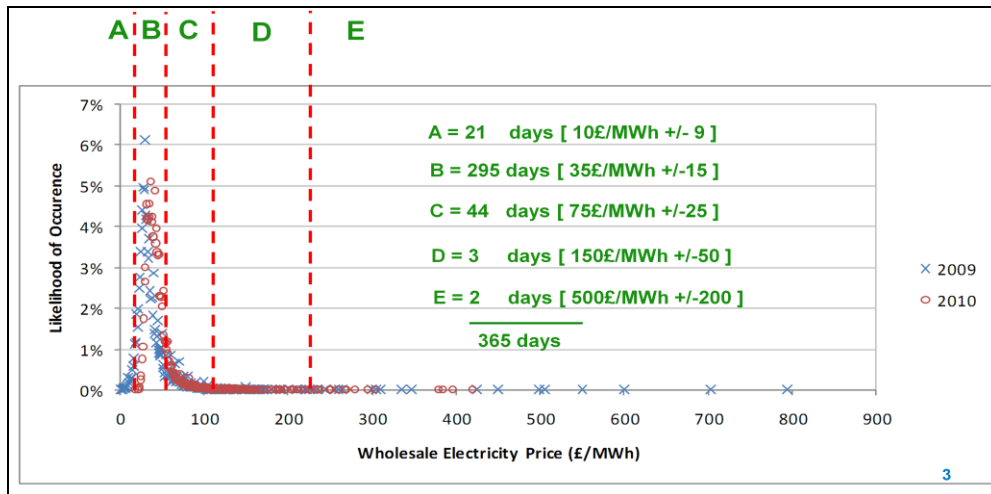
- The values set for each observation are the result of the estimates of the likelihood of the values to be closer to the average. In other words, we appreciate that within a single year very high or very low wholesale prices are less likely to occur than average prices. For this reason we have refined the granularity of the modelling to take into consideration such likelihood. We have therefore estimated the probability density of prices to be within five selected bandwidth, ranging from very high (peak) prices to high, average, low and very low.
- While we appreciate that prices vary not only during a single day, but also within a single week (e.g. working vs non-working days) and year (winter vs summer), we feel that such differences have been already captured in our modelling approach. In selecting the bandwidth we have already considered all the possible price ranges (so for example the peak would probably correspond to the winter peak price on a representative working day). Differences due to seasonality or working/non-working days issues are also reflected in the different granularity applied to the bands.
- Third, we have taken the average wholesale forecast prices for the years 2013-2016 as estimated by Redpoint for in Project TransmiT and calculated an average price for the four year period proposed in CMP 192. The forecast prices are presented in the table below (in yellow: Redpoint forecast prices, in white our estimates):

Table 4.2 - Assumptions on wholesale prices

		2009	2010	2011	2012	2013	2014	2015	2016
Average wholesale price	£/MWh	38.34	40.79	57.73	58.21	63.31	63.41	62.03	77.78
Annual growth	%		6.39	41.53	0.83	8.76	0.16	-2.18	25.39

- Fourth, to make our assumptions more consistent with historical data, we have assumed that within a given year there will be some prices (average prices) occurring with more frequency than others (peak prices). We have therefore assumed that prices will likely fall within bands with a certain frequency as illustrated in the figure below. To ensure the frequency of each occurrence was as realistic as possible, we have checked the probability density for both 2009 and 2010. From the results obtained we can therefore be fairly confident that the frequency assumed is a good representation of reality.

Figure 4.3 - Probability density of average prices



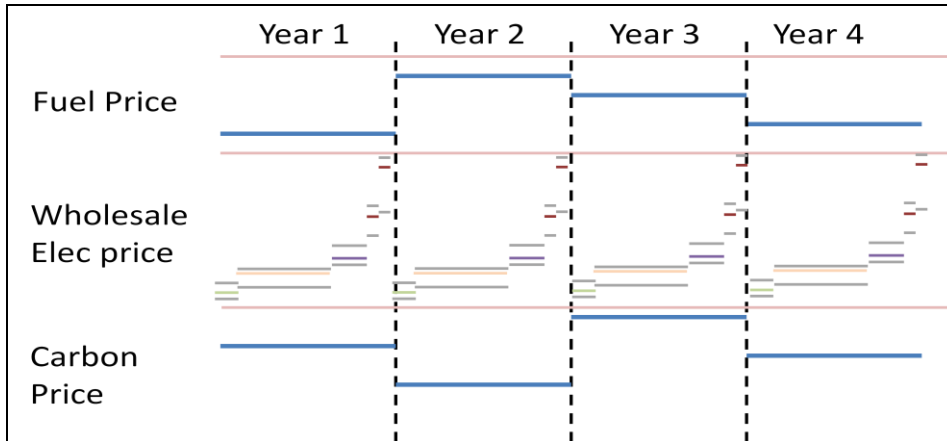
- Finally, we have estimated the variation (annual growth) for each period and then applied the growth rate to five different bands to obtain an average wholesale price forecast. The table below presents the process adopted to obtain the average wholesale forecast prices.

Table 4.4 - Average wholesale forecast prices per band and per year

Band		2009	2010	2011	2012	2013	2014	2015	2016	Average (2013-2016)
A	£/MWh	10	10.64	15.06	15.18	16.51	16.54	16.18	20.29	17.38
B	£/MWh	35	37.24	52.70	53.14	57.79	57.89	56.63	71.00	60.83
C	£/MWh	75	79.79	112.93	113.87	123.85	124.04	121.34	152.15	130.35
D	£/MWh	150	159.59	225.86	227.74	247.69	248.08	242.68	304.30	260.69
E	£/MWh	500	531.95	752.87	759.13	825.64	826.94	808.95	1014.35	868.97

4.14 The following Figure further present our approach to modelling the bands and the price variations within a single year and across the 4 years period. The blue lines represent the baseline assumptions, while the red lines represent the bandwidths.

Figure 4.5 - Approach to modelling fuel, wholesale and carbon prices



Plants Selection

4.15 We have aligned our assumptions on plant specification (e.g. size, capacity, TNUoS charges etc) to the ones used by Redpoint in Project TransmiT. They are presented in the table below.

Table 8.6 - Plant economics

Plant economics	
FOM	£/kW/yr
Plant efficiency	%
VOM + BSUoS	£/MWh
Plant size	MW
Average availability factor	%
Average load factor last 6 years	%
Carbon intensity	tCO ₂ /MWh
Discount rate	%
TNUoS zone	

User commitment regimes modelled

4.16 We have modelled the original regime of four years' user commitment as per National Grid's Proposal, as well as the alternative two year regime proposed by the Workgroup.

4.17 In the model, the difference between the two regimes would be the profile of the liabilities calculated as the percentage of capex of each year as presented in the table below.

Table 4.7 - Liabilities profile under the four years and two years regime

	Four years (Original Proposal)	Two years (Workgroup alternative)
< 1 year	100%	100%
1-2 years	75%	75%
2-3 years	50%	-
3-4 years	25%	-
> 4 years	-	-

4.18 All other assumptions (e.g. market data and plant specifications) would be the same irrespective of the regime modelled.

Appendix 5 – Industry process

5.1 The Connection and Use of System Code (CUSC) sets out the standard commercial terms between generators (and other network users) and National Grid in its role as System Operator. Anyone who is party to the CUSC can propose an amendment and once a CUSC Amendment Proposal has been raised, the CUSC Amendments Panel (“the Panel”) is responsible for assessing the proposal before referring it to the Authority for a decision.

Industry process to date

5.2 National Grid raised CMP 192 in February 2011⁵¹. Due to the complex nature of the proposal and the wide-ranging industry impacts, a Workgroup was formed by the panel to further develop and assess the impacts of the proposal.

Workgroup consultation and report to the panel

5.3 The workgroup were responsible for developing the proposed modification and evaluating whether it would better meet the CUSC objectives as well as developing any alternatives. They were guided by the terms of reference agreed upon by the CUSC panel. The terms of reference, along with the members of the Workgroup, can be found in the Workgroup consultation⁵². The CUSC Objectives are:

- The efficient discharge by National Grid of the obligations imposed on it by the Electricity Act 1989 (“the Act”) and its Transmission Licence;
- 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.
- Compliance with the Regulations and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.⁵³

5.4 Following detailed discussions, the Workgroup published an industry consultation on the proposed amendment in July 2011. As well as consulting on the core proposal, the Workgroup used this as an opportunity to ask stakeholder’s views on a number of alternative approaches. These approaches centred around of core characteristics of the proposal such as:

- the notice period required in order to avoid any user commitment;
- the level of sharing of liabilities between generation and demand;

⁵¹<http://www.nationalgrid.com/NR/rdonlyres/D2D6F81D-7C3E-4049-8429-817E6A5DA657/45775/CMP192EnduringUserCommitmentv1.pdf>

⁵²<http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/amendments/currentamendmentproposal>

⁵³ This objective was added to the CUSC as part of the ‘third package’ of EU legislation.

- the methodology through which the liabilities were calculated; and,
- the factors that would impact the level of security a generator is required to post.

5.5 Twenty-three stakeholders submitted responses to the Workgroup consultation and nine alternatives to the original proposal were received⁵⁴. The Workgroup were required to consider all Workgroup Consultation Alternative Requests, and where the Workgroup believed any of these alternatives would better facilitate the CUSC Objectives were required to develop the alternative as a Workgroup Alternative CUSC Modification (WACM).

5.6 Following receipt of these responses, the Workgroup identified three elements of the original proposal on which they wanted to present alternatives:

- **User commitment period:** In addition to the original proposal of four years user commitment for both pre and post commissioning generators, two alternatives were proposed. The first was to reduce the user commitment period to two years for post commissioning generators, but retain the four-year period pre-commissioning. The second was to reduce the user commitment period to two years for both pre and post commissioning generation.
- **Grandfathering:** Through this alternative, users with existing offers on the interim arrangements for user commitment extant on the day of implementation of CMP 192 would have the option of remaining on the terms of the offer until commissioning.
- **Sharing Local liability with demand users:** This alternative proposes that where local works are designed to accommodate demand, either existing or in the future, the liability for 50% of those works will be shared between demand and generation in the same manner as is proposed for wider works.

5.7 Taking each combination of these alternative approaches results in 12 alternatives (3 different user commitment periods, 2 options for grandfathering and 2 options for sharing local works). In addition the Workgroup included the following two proposals in each of the alternatives:

- **Specific advanced works amount:** Under this approach the generic £1,2,3/kW amount is removed for users who chose the specific attributable liability approach.
- **Capping the advanced works amount:** Under this approach the £1,2,3/kW liability in advance of the trigger date is capped at their estimated liability four years from commissioning (i.e. 25% of their total liability).

⁵⁴ These responses and alternatives are summarised in sections 9 and 10 of volume 1 of the workgroup report to the panel:

<http://www.nationalgrid.com/NR/rdonlyres/C12D969B-EB25-4AE8-BB74-46FB5404F8FB/49242/CMP192WorkgroupReporttoPanelVolume1v20.pdf>

5.8 The Workgroup then voted on these alternatives, through three separate rounds of voting. The results of the vote, along a summary of the alternatives can be found in Table A2 at the end of this chapter.

Code Administrator Consultation

5.9 These alternatives, along with a summary of consultation responses were presented in a report to the panel in September 2011; a week later these alternatives were consulted on through the "Code Administrators' consultation".⁵⁵

Final CUSC Modification Report

5.10 Each proposal and alternative amendment was then assessed and voted upon by the panel before the Final CUSC modification report was submitted to the Authority on 22 November 2011. Section 8 of the CUSC outlines in full what this report should include, the main elements are detailed below:

- The summary of the views and recommendation (if any) from the Panel and/or the Workgroup.
- A proposed implementation date, in the event that the proposal is approved by the Authority.
- Analysis of whether (and to what extent) the proposal (and/or any WACMs) would better facilitate the applicable CUSC Objectives. This should include, where the impact of the proposal is likely to be material, an assessment of the quantifiable impact on greenhouse gas emissions.
- A copy of any impact assessment prepared.

5.11 The final CUSC modification report can be found on National Grid's website.⁵⁶

5.12 The Workgroup did not produce a quantifiable impact on greenhouse gas emissions. They suggested that this would be a substantial piece of work and, that having considered the consultation responses, they did not consider that the proposal would not have a material impact on greenhouse gas emissions.

Panel and Workgroup votes

5.13 The table below summarises the votes of the Workgroup and the Panel on each of the alternatives.

⁵⁵ <http://www.nationalgrid.com/NR/rdonlyres/5E2600D4-4491-42B3-BC0B-F31AECB1ED21/49364/CMP192CodeAdministratorConsultationVol1v30.pdf>. The responses can be found at the following location: <http://www.nationalgrid.com/NR/rdonlyres/D786DA6A-B18F-49E9-B9E7-A19E6B0725EF/49718/Volume3CMP192responses.pdf>

⁵⁶ <http://www.nationalgrid.com/NR/rdonlyres/DA4EB7E8-7168-49CA-A115-381A3A5D9753/50218/CMP192finalCUSCModificationReport10.pdf>

Table 5.1 - Summary of Workgroup and panel votes

Workgroup alternative		Commitment period (Pre-commissioning : Post-Commissioning)												CUSC baseline	Original Proposal
		4:4				4:2				2:2					
		1	2	3	4	5	6	7	8	9	10	11	12		
Workgroup alternative options	Grandfathering pre-commissioning terms	X	X	✓	✓	X	X	✓	✓	X	X	✓	✓		
	50% sharing for local where is / can be shared with demand	X	✓	X	✓	X	✓	X	✓	X	✓	X	✓		
	Capping advanced works amount for generic and replacing the £1,2,3/kW with actual costs for cost reflective	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Workgroup vote (14 votes)	Better facilitate objective A than the CUSC baseline	8	8	8	8	11	11	12	12	9	10	10	9		6
	Better facilitate objective B than the CUSC baseline	6	6	6	6	11	10	12	12	10	11	11	10		4
	Better facilitate objective A than the Original proposal	8	7	7	7	12	12	12	12	9	9	9	9		
	Better facilitate objective B than the Original proposal	9	8	8	8	13	13	13	13	9	9	9	9		
	Best facilitates the objectives of the CUSC	1	0	0	2	0	0	1	5	0	1	1	3	0	0
Panel vote (8 votes)	Best facilitates CUSC Objective A	3	3	3	3	5	5	5	5	4	4	5	5		3
	Best facilitates CUSC Objective B	2	2	2	2	5	5	6	6	5	5	7	7		2
	Overall better meets applicable CUSC objectives	2	2	2	2	5	5	6	6	4	4	6	6		2
	Best meets applicable CUSC objectives	0	0	0	0	0	0	0	3	0	1	2	2		0

Appendix 6 - Glossary

A

ARODG

Access Reform Options Development Group

C

CAP 131

CUSC Amendment Proposal 131. CAP 131 sought to introduce an enduring generic methodology for calculating the securities based on IGUC with some variations, replacing Final Sums methodology. The proposal also sought to increase the level of user commitment provided by existing generators by introducing a requirement to provide two years notice of station closure or face financial penalties. Finally, CAP 131 proposed to introduce a non-refundable holding fee in the period before works commence, reduce the total level of costs secured by generators by 50% and to introduce a charge for generators who alter their capacity before connection.

Capex (capital expenditure)

Expenditure on investment in long-lived network assets, such as gas pipelines or electricity overhead lines.

CCGT

Combined Cycle Gas Turbine

CfD

Contract for Difference. Under a CfD the purchaser (typically an electricity retailer) agrees to purchase a specified physical quantity of energy from the spot market at a set price (the "strike price"). If the actual price paid in the spot market by the purchaser is higher than the strike price, the counterparty to the contract (typically an electricity generator or a financial institution) pays the purchaser the difference in cost. Conversely, if the price paid is lower than the strike price, the purchaser pays the counterparty the difference.

CFP

Carbon Floor Price. Mechanism aimed at providing greater long-term certainty around the additional cost of running polluting plant. CFP would top up the EU Emissions Trading System (EU ETS) carbon price to a target level for the electricity generation sector.

Connect and Manage

Under this regime generators can connect to the transmission network in advance of all the necessary upgrades and reinforcements to the wider transmission system being put in place.

Connection and Use of System Code (CUSC)

A multi-party document creating contractual obligations among and between all users of the transmission system, parties connected to the GB transmission system and National Grid. Persons wishing to use and/or connect to the GB transmission system are required to accede to the CUSC by signing the Framework Agreement and to enter into a Bilateral Agreement with National Grid.

D

DECC

Department of Energy and Climate Change

E

EMR

Electricity Market Reform. A DECC-led project looking to incentivise elements of the GB generation mix in response to investment challenge facing generation and networks infrastructure.

G

GARF

Global Asset Reuse Factor. GARD is set at 33% and represents the transmission assets which a TO could potentially reuse on another project.

H

HVDC

High Voltage Direct Current

I

IGUCM

Interim Generic User Commitment

L

LARF

Local Asset Reuse Factor. LARF is determined by the TO on a generator-specific basis and represents the transmission assets being constructed for that generator which the TO could potentially reuse on another project.

LCPD

Large Combustion Plant Directive

LR

Load-Related

M

MA

Mandatory Auction

MIP

Market Index Price

MITS

Main Integrated Transmission System. A MITS node is defined as being a node with more than four transmission circuits, or two or more transmission circuit and a Grid Supply Point.

MMM

Mandatory Market Making

R

RMR

Retail Market Review. Ofgem's investigation into the markets for electricity and gas for households and small businesses.

RO

Renewables Obligation

S

SIF

Strategic Investment Factor. SIF is a discount that applies in the event that a TO builds greater capability than is required for the contracted generation connecting to that asset, and is calculated for each circuit/cable/substation as a ratio of total contracted generation capability against transmission asset capability.

SO

System Operator. The electricity transmission system is operated by National Grid Electricity Transmission plc in its role as the System Operator for the onshore and offshore transmission system.

SQSS

Security and Quality of Supply Standard

SYS

Seven Year Statement

T

TEC

Transmission Entry Capacity

TNUoS

Transmission Network Use of System Charge

TO(s)

Transmission Owner(s). The onshore TOs are NGET for England and Wales, Scottish Power Transmission Limited for southern and Scottish Hydro-Electric Transmission Limited for northern Scotland.

U

URF

User Risk Factor. URF exists to recognise the fact that consumer demand also drives wider transmission investment.

V

VAR

Value At Risk. The total VAR is the value of new investments that the TOs are undertaking that, if better information were available, could be more efficiently managed to the advantage of all network users.

W

WACMs

Workgroup Alternative CUSC Modifications

Appendix 7 - Feedback questionnaire

7.1 Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

7.2 Please send your comments to:

Andrew MacFaul
Consultation Co-ordinator
Ofgem
9 Millbank
London
SW1P 3GE
andrew.macfaul@ofgem.gov.uk