# TRANSMISSION CHARGING OPTIONS PAPER

**This Paper sets out a number of possible options for change to the GB energy regulatory framework and electricity transmission charging regime to help connect, transport and export Scotland's energy potential.**

**Transmission Charging – Options paper**

## 1. Background

1.1 Transmission Network Use of System (TNUoS) charging, or transmission charging, is the charge levied on generators for transmitting electricity across the GB electricity grid network. National Grid, the company appointed by Ofgem to manage the GB grid, implement a charging regime that levies higher charges for access and use of the transmission network on generators furthest from centres of demand. TNUoS represents a proportion of overall transmission costs, with the remainder being met directly by consumers.

1.2 National Grid has a statutory duty to develop and maintain an efficient, co-ordinated and economic transmission system and to facilitate competition in generation and supply. National Grid is also obliged under its transmission licence:

> (i) to keep the Use of System Charging and Connection Charging Methodologies at all times under review
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> (ii) to make such modifications of the Use of System Charging Methodology as may
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> a) to facilitate effective competition in generation and supply;
> b) to result in charges which reflect, as far as reasonably practicable, the costs incurred by transmission licensees in their transmission businesses;
> c) in so far as is consistent with a) and b) above, as far as reasonably practicable, they properly take account of the developments in transmission licensees' transmission businesses.

## 2. Arguments for locational transmission charging

2.1 Proponents of locational charging believe it gives economic signals about where to site new generation and develop existing generation, and reflects the costs to the transmission network that generators cause.

2.3 The main underpinning principle is a charging system that is cost reflective – i.e. reflects the costs that system users cause to be incurred for building, developing and maintaining the grid system, and to minimise cost to the consumer.

2.4 The locational charging approach is designed to encourage generation closest to where it is needed the most. It is intended to send signals to generators on where to locate, to minimise the energy lost from transmission over long distance, and helps to ensure the grid network does not become constrained at pinch points.

2.5 The locational charging methodology levies higher charges for access and use of the transmission network on generators furthest from the main centres of demand and means developers in peripheral parts of the grid pay for the grid reinforcement and upgrades they cause in the GB system.

2.6 Proponents of locational charging argue that it delivers the most cost effective and economic system possible. The charging mechanism is not designed to facilitate and encourage renewable energy development and deliver a broader mix of energy supply. A range of incentive mechanisms exist to deliver this, including the Renewables Obligation Certificate scheme and feed in tariffs for small scale micro generation.

## 3. Arguments against locational charging

3.1 Counter arguments are that locational charging is designed to reflect a generating mix predicated on generation close to centres of demand. It does not therefore fit easily with the policy aims of delivering a more balanced and diverse and sustainable energy mix on the GB network, delivering renewable energy targets and helping to meet the challenge of climate change through moving to a low carbon energy mix.

3.2 Opponents of locational charging argue it is not designed to encourage a fundamental shift to more mixed and geographically spread energy supply, including a significant renewable energy element - as the best sources of renewable energy to be in parts of the UK distant from main demand centres.

3.3 It can be seen as a barrier to driving the significant scale of grid reinforcement required to strengthen and upgrade an ageing and centralised GB grid system, to allow it to connect and transport energy from a more diverse and dispersed energy generating pattern. This has recently proved to be the case in the Western Isles, where Scottish and Southern Energy have announced a delay in the planned 450MW sub sea cable between the islands and the Scottish mainland – because the combination of high locational TNUoS and for developer underwriting of grid reinforcement have made the renewable energy projects in the Western Isles uneconomic.

3.4 It can be seen as a barrier to developing renewable energy generation in peripheral parts of the GB network, and a factor that impacts on investment decisions in the Scottish energy sector. Again, this has been highlighted by recent events in the Western Isles where developers are unable to proceed as a result of high locational TNUoS. As a result the Scottish Renewables Forum have written to DECC highlighting high TNUoS as the “tipping point” for developments not proceeding in the Western Isles. It is now clearly important that island charging be addressed as a priority in the review of TNUoS announced by Ofgem on 22nd September. It is also important that DECC also exercises its statutory powers in Section 185 of the Electricity Act 2004 to cap island transmission charges. The Scottish Government supports the arguments of the Scottish Renewables Forum.

3.5 The locational charging system was designed in a very different policy context than currently prevails. Significant policy developments now include the need to develop renewable energy capacity and low carbon economies to offset the challenge of climate change and ensure security of future energy supply (to replace ageing large scale thermal generating capacity in the UK, carbon resources become scarcer and sources of supply in increasingly geopolitical unstable areas.

3.6 Opponents of locational charging also argue that it is failing to achieve the purpose for which it was created, since recent evidence suggests that locational decisions are taken on other grounds than charging systems. Indeed there is counter evidence that the charging system is acting as a disincentive to investment decisions on both conventional and renewable generation which are otherwise justified on security of supply and low carbon grounds.

3.7 Taken together, these arguments suggest locational charging is no longer wholly fit for purpose to deliver a more sustainable, low carbon energy mix and ensure security of energy supply.

3.8 As the costs of grid development are ultimately met by consumers, there is a need to ensure that the consumer is protected from unnecessary costs in grid development by placing a reasonable proportion of the costs generators and ensuring the development of the grid is efficient and economic, while facilitating a balanced energy mix, including a significant amount of renewable energy.

## 4. Initial discussion of the need for change

4.1 The Scottish Government supports a change to the existing charging approach. In September 2008 Scottish Ministers proposed an alternative charging model[1] for a flat rate charge to connect to the grid based on usage of the system irrespective of location. At that time, this model was developed with the support of Scottish Power, Scottish and Southern Energy and the Scottish Renewables Forum.

4.2 In line with energy industry practice for consideration of changes to grid charging and access, National Grid carried out two periods of consultation on the alternative transmission charging model in 2009. Notwithstanding majority support for the proposal, in September 2009[2], National Grid published a report concluding that it would not support a change the current system.

4.3 National Grid based its conclusion on it not believing that such a change to the charging methodology would better meet National Grids' licence obligations to facilitate effective competition in the generation and supply of electricity, to reflect the costs incurred by transmission companies.

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[1] http://www.nationalgrid.com/uk/Electricity/Charges/modifications/uscmc/

[2] http://www.nationalgrid.com/NR/rdonlyres/F6E271BF-13E3-405F-B993-5CCF73443BA3/36992/GBECM17ConclusionsReportv10.pdf

4.4 National Grid also indicated they were unconvinced of the need – or economic argument - for change, that the locational charging methodology causes significant volatility in charges, and cited the absence of quantative evidence that existing locational approach discourages renewable energy development.

4.5 In reaching its conclusions, National Grid did, however, recognise that the TNUoS approach could be improved on. The consultation on the proposals for a flat rate charge highlighted that in certain circumstances locational charging can lead to volatile charges. It also highlighted that a locational based approach is not appropriate for wind generation, principally because wind generates less transmission reinforcement than conventional base load generation.

4.6 National Grid is now actively looking at both issues, to address the volatility of charging than can result from locational TNUoS and deliver a charging methodology for wind generation that is based on year round use of system rather than peak demand. National Grid have indicated they believe TNUoS for wind energy from Scotland could reduce the current locational tariff by 50%.

4.7 This shows there is both scope, and a willingness to change the current TNUoS approach.

## 5. The continuing context for change

5.1 In the EU Renewables Directive[3] of 2009 the UK committed to delivering 15% of energy from renewable sources by 2020. This ambitious target is a key policy driver of change in the GB electricity generation and supply system. In the UK, 5% of consumption was produced by renewable sources in 2008. In Scotland, a large proportion of electricity demand is produced by renewable generators, with 22% of gross consumption met by such sources in 2008. Scotland, with a Scottish Government target of 50% of gross electricity consumption to be met by renewable sources by 2020, is well placed – and willing and able - to make a significant contribution to the overall UK target of 15% of energy from renewable sources by 2020. The Directive also requires member states to develop National Renewable Energy Action Plans setting out how they will meet the 2020 targets. Parts of the Directive, and the resulting action plans are to focus the charging and access arrangements for renewable energy, and from peripheral areas in particular, in individual Member States.

5.2 Delivering this challenging renewable energy vision at EU level will be set in the context of the 3rd Package of energy reforms agreed by the European Commission in September 2007[4] for development of an open and

[3] http://eur-lex.europa.eu/JOHtml.do?uri=OJ:L:2009:140:SOM:EN:HTML
[4] http://ec.europa.eu/energy/gas_electricity/third_legislative_package_en.htm

competitive EU energy market. The key policy strands of the 3rd package includes: separation of production and supply from transmission networks; cross-border trade in energy; more effective national regulation; promotion of cross-border collaboration and investment; and greater market transparency on network operation and supply.

5.3 The energy sector is a cornerstone of the Scottish economy, supporting economic growth, businesses, communities and jobs. The sector also plays a key role in helping meet renewable energy targets, tackle climate change and in delivering the transition to a low carbon economy in Scotland, which is part of the overarching Scottish Government Economic Strategy[5] to deliver Sustainable Economic Growth. Scotland's existing energy resources and significant energy potential from renewable energy sources drive a number of Scottish Government energy policies aimed at making the transition to a low carbon, sustainable and secure energy future. Key to that policy vision is capitalising on the scale and scope of existing and future energy resources in Scotland, and connecting and transporting electricity from Scotland to other parts of the UK and beyond.

5.4 In March 2010 to Scottish Government published "Towards a Low Carbon Economy for Scotland"[6], a discussion paper on the key dimensions of a transition strategy towards a low carbon economy, the approach and timeframe to develop that strategy and to engage others in the strategy process. The resulting Low Carbon Economy Strategy will be published shortly.

5.5 At UK level, the UK Government recognises meeting climate change targets and ensuring security of supply, will require large amounts of renewable and other low carbon generation to be able to connect to the GB electricity networks. The UK expects Scotland to play a key role in helping deliver this. This could see, for example at least 1/3 of the UKs total of 40% of total electricity supply from renewable sources by 2020 coming from Scotland. Scotland is also central to the deployment of Carbon Capture and Storage technology.

5.6 DECC used its interventionary powers under the Energy Act 2008 to address the significant queue of renewable energy projects that are at present unable to connect to the GB grid and to deliver a better grid access for new renewable generation. The outcome of this *Improving Grid Access*[7] work delivered a "connect and manage" approach from August 2010 for new renewable generation, with socialisation of the associated costs of managing additional constraints to the grid ahead of necessary reinforcement.

5.7 In March 2010, Ofgem announced that it would drop its proposal for targeting costs of managing grid constraints at Scottish generators, known as locational Balancing Services use of system charging or congestion charging.

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[5] http://www.scotland.gov.uk/Publications/2007/11/12115041/0

[6] http://www.scotland.gov.uk/Publications/2010/03/22110408/0

[7] http://www.decc.gov.uk/en/content/cms/consultations/improving_grid/improving_grid.aspx

The implementation of Locational BUSoS would have placed an additional cost on Scottish generators in addition to high locational transmission charges. As a result, the costs of managing system constraints ahead of grid reinforcement, will continue to be shared among all GB system users.

5.8 This decision is consistent with the DECC view on spreading the costs of delivering new renewable generation equally across the GB network. It is also consistent with finding ways to encourage and accelerate the shift to renewable generation in the most suitable parts of the UK. The recent decision by DECC and Ofgem support the principle of socialisation of costs across the GB network users as a necessary step to delivering the policy aims of a balanced and secure energy mix. This suggests that this same principle can and should be extended, either in whole or in part, to transmission charging.

5.9 Significant questions remain over, whether even with improved access, and sharing of the costs of managing system constraints ahead of grid reinforcement, the rate of deployment of renewable projects can deliver the UK 2020 renewable target of 15% of electricity from renewable energy sources. This suggests further change in the regulatory framework and transmission charging regime needs to be considered.

5.10 The need to look again at transmission charging was highlighted in the report on *The Future of Britain's Electricity Networks*[8], by the Energy and Climate Change Committee of the House of Commons, published in February 2010. The Committee concluded that transmission charges "should not discriminate against renewable energy wherever it is located in Britain". The Committee also recommended the UK Department of Energy and Climate Change establish an independent review to develop an appropriate charging methodology.

5.11 The Scottish Government, Scottish energy sector, the Energy Enterprise and Tourism Committee of the Scottish Parliament, the Scottish renewable energy sector and a wide range of sector and business representative and trades union interests in Scotland are therefore continuing to press for changes to the GB energy regulatory framework and electricity transmission charging regime to help connect, transport and export Scotland's remarkable renewable energy potential.

## 6. Moving forward discussions on the need for change

6.1 The GB grid system needs significant development and reinforcement to be able to connect and transport significant amounts of renewable energy from sources around the periphery of the system. The extent, cost and scope of that reinforcement is significant. That will need to be paid for. The key issue is how it is paid for.

[8] http://www.publications.parliament.uk/pa/cm200910/cmselect/cmenergy/194/194.pdf

6.2 To find new ways addressing this and some of the fundamental differences of opinion that exist on transmission charging, and in light of the EU, UK and Scottish Government policy framework, the Scottish Government led further discussions with Ofgem, National Grid and Scottish energy industry interests on areas to move the discussion forward.

6.3 The Scottish Government Minister for Energy, Enterprise and Tourism led this discussion on 18th January 2010 and agreed[9] to develop further options for change to the current charging regime for wider consultation.

6.4 On 21st April the Scottish Parliament debated the issue of transmission charging and passed a motion opposing the locational charging approach[10]. The Scottish Parliament also supported the calls for an urgent review of the locational charging regime to be carried out. Ahead of that debate, Scottish industry, business and renewables representative bodies and trades union leaders published an open letter to all party leaders in the Scottish Parliament adding their voices to the growing call for a review of the UK transmission charging regime.

6.5 The Scottish Government has welcomed the resulting review of transmission charging announced in Project TransmiT by Ofgem in Glasgow on 22nd September 2010. Project TransmiT must deliver lasting and fundamental change that helps meet Government policy objectives of making the transition to a low carbon energy mix and meeting Scottish, UK and EU renewable energy and carbon reduction targets.

## 7. Options for change

7.1 The Scottish Parliament, the Scottish Government, industry, business and trades union leaders in Scotland and the UK Parliaments Energy and Climate Change Committee all agreed the need for an independent review of TNUoS. Project TramsiT therefore must deliver a thorough, objective and independent assessment of locational charging, looking at TNUoS in each part of the GB system and by type of generation, its impact on both on current and future generating mix scenarios, and include an assessment of the impact on TNUoS on deployment rate for renewable projects in the UK and Scotland.

7.2 In this context, the Scottish Government have identified a number of options for change to locational charging. These are set out below and should – through Project TrasmiT – now form the basis of more detailed discussion with energy companies and the business, trades union, academic, consumer and other interests who have a clear and growing interest in the current transmission charging approach.

[9] http://www.scotland.gov.uk/Resource/Doc/917/0096210.pdf
[10] http://www.scottish.parliament.uk/business/officialReports/meetingsParliament/or-10/sor0421-02.htm#Col25475

7.3 **A flat rate charge.** The Scottish Government, Scottish generators have argued for a flat rate charging regime, irrespective of where on the grid generators seek to connect. There are increasing arguments for that.

7.4 **Revise the existing balance between the socialised and locational element of locational charging**, in the context of the scale of the grid upgrade needed and the changing policy framework and priorities. This could include scenario work on the impact for generators in parts of the GB system of changing the existing socialised element of TNUoS charging, how this would impact on existing generators across the GB system.

7.5 **A simpler banded approach to charging** – to reduce the scale of disparity between parts of the GB network. Locational charging is applied in a number of other parts of Europe, especially in the integrated Nordic market, although the scale of the variances between charges in parts of those networks is much less than in the GB system. This suggests work could be undertaken to assess and address on the possible impact of a banded approach to the current locational charge – with the aim of introducing smoother banding of charges, and reducing the scale and extremity of the variances between charges in parts of the GB network. This could include scenario work to assess the impact and benefits of a compression of the TNUoS variances (on an incremental scale of 5%, 10% and 15%).

7.6 **Removing the subsidy element of TNUoS**, to apply a zero baseline for transmission charges and explore options for capping the upper limit of positive charging and the impact this would have on generators in the GB system.

7.7 **Re-zoning of the locational charging** map to smooth the differential in the existing system and reflect changes since the introduction of TNUoS, including reinforcements to the grid system, changes in patterns of generation and centres of demand.

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