HM Government

Scotland analysis: Energy

Technical annex

April 2014

Overview

This technical annex provides further information on the analysis undertaken by DECC as presented in the *Scottish Analysis: Energy* paper. In particular, it sets out the methodology and assumptions underpinning the analysis on capacity margins in Chapter 1 *(A single integrated market)* and on energy bills in Chapter 4 *(Effects on businesses and consumers)*. For the remainder of the paper, DECC did not undertake new analysis and therefore all other statistics and estimates presented in Chapter 2 *(Low carbon energy)*, Chapter 3 *(Oil and gas)* and Chapter 5 *(Energy liabilities)* are sourced from previously published reports and referenced accordingly throughout the paper.

Chapter 1: A single integrated market

1. As outlined in Chapter 1 of the paper, under current market arrangements the electricity system is operated as a single GB market. As a result, estimating capacity margins in any separate geographic area of the network is likely to be misleading as it does not reflect the way in which the System Operator currently manages security of supply. While independence may lead to separate electricity systems being established in an independent Scotland and the continuing UK, it is reasonable to assume that some electricity would continue to be traded between Scotland and the rest of the UK given that the UK currently trades with other interconnected markets.

2. However, in order to provide estimates of potential capacity margins under the scenario of separate markets, Box 1B in the paper sets out a hypothetical scenario in which it is assumed that there are no flows of electricity between an independent Scottish state and the continuing UK. The outputs from the analysis are sensitive to the underlying assumptions. The modelling approach assumes that the current Scottish Government's target of delivering 100% of renewable electricity as a share of gross annual consumption in 2020 is achieved. It is estimated that Scotland would require around 15.6GW and 41TWh of renewable capacity and generation respectively in order to meet this 2020 target, which is broadly consistent with analysis published by the Scottish Government.[1]

3. The approach to modelling derated capacity margins is based on the projected generation mix in GB in 2020 from the analysis by National Grid underpinning the Electricity Market Reform (EMR) Delivery Plan.[2] Consistent with the baseline scenario (Scenario 1), DECC estimated total capacity in Scotland using assumed country technology splits based on a report by Arup 2010, the Renewables Energy Planning Database and DECC Office for Renewable Energy Development (ORED) intelligence. However, total renewable generation under this assumed capacity allocation results in only around 32TWh of renewable generation in Scotland in 2020, less than the estimated 41TWh required to achieve the Scottish Government's renewable electricity target. In order to remain consistent with the Scottish Government ambition of 100% renewables by 2020, the capacity split for certain renewable technologies was consequently adjusted upwards in order to deliver around 15.6GW of installed renewable capacity in total by 2020. Further explanation of the approach to allocating renewable capacity between Scotland and the rest of GB is provided in the next section of this annex. Derated capacity in Scotland and the rest of GB was estimated to be 6.4GW and 56GW respectively in 2020.

4. Scottish peak demand has been calculated by using Scotland's share of transmission connected peak demand, based on information from National Grid, to calculate Scotland's share of total transmission and distribution connected GB peak demand. This assumes that Scottish distribution connected peak demand is proportional to its share of transmission connected peak demand. Peak demand in Scotland and the rest of GB was estimated at 5.5GW and 51GW respectively in 2020.

5. In the EMR Delivery Plan Scenario 1, the derated capacity margin[3] for GB was estimated to be 8.3% in 2020 under the assumption that the current integrated market arrangements persist and that the grid continues to be managed to ensure the supply and demand of electricity is balanced for GB as a whole. Splitting this capacity margin for Scotland

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1 Electricity Generation Policy Statement – 2013, Scottish Government, June 2013.

2 Electricity Market Reform, National Grid Analytical Report, Department of Energy and Climate Change, December 2013.

3 The de-rated capacity margin is the capacity margin adjusted to take account of the availability of plant at peak, specific to each type of generation technology.

and the rest of GB using the above assumptions on derated capacity and peak demand results in a 7.4% derated capacity margin for the rest of GB and a 16.3% derated capacity margin for Scotland in 2020.

6. The analysis demonstrates that if there were no flows of electricity between Scotland and the rest of GB in 2020, it would not have a significant impact on the capacity margin in the rest of GB. This is because the assumed loss of Scottish derated capacity to the rest of the GB in 2020 is largely offset by the removal of the need to meet Scottish peak demand. As outlined above and in Chapter 1 of the paper, this example is for illustrative purposes only, as it abstracts from the way in which electricity supply and demand is currently balanced by the System Operator at the GB wide level.

7. De-rated capacity margin analysis also includes an adjustment for the reserve held by the System Operator for the single largest infeed loss. This type of reserve is required to maintain the stability and integrity of the electricity system and its importance is such that the System Operator would curtail demand before using this reserve. The largest infeed loss is currently set as a single figure for the whole of GB. As it is unclear how security of supply would be managed in an independent Scottish state, this analysis was based on a simplifying assumption of zero infeed loss for Scotland. However, this is a key assumption and it would be reasonable to assume that a System Operator of a separate electricity market in Scotland would include an adjustment for infeed loss in a similar way to the approach under current GB market arrangements. For example, an infeed loss adjustment for Scotland of 0.7GW (assumed to be equivalent to the assumption made for the rest of GB) would have a significant downward impact on the derated capacity margin in Scotland, given that it would account for around 11% of total derated capacity in Scotland. In this scenario, the derated capacity margin in Scotland would reduce to 3.6% in 2020.

Chapter 4: Effects on businesses and consumers

Summary of bill impact analysis

8. Chapter 4 of the paper makes clear that additional costs for consumers in Scotland would be inevitable in the event of independence as the shared costs of network investment and low carbon generation between consumers in an independent Scottish state and the continuing UK would be unwound. This arrangement currently protects Scottish energy consumers from the full costs of energy infrastructure investment and renewable electricity generation.

9. Without unrestricted access to the integrated GB market, the costs of supporting Scottish energy network investment, small-scale renewables and programmes to support remote communities would fall on Scottish bill payers alone. As set out in tables 1 and 2 below, it is estimated that this would add at least £38 to annual household energy bills and around £110,000 (6%) to energy costs for a medium-sized manufacturer in 2020 (2012 prices). As explained further below, this is the minimum likely increase. There is scope for it to rise to £60 for households and £179,000 (9%) for a medium-sized manufacturer, in line with the potential investment levels, particularly in networks (2012 prices).

10. In addition, if the full costs of supporting large scale Scottish renewables fell to Scottish bill payers, it is estimated that it would add a further £129 for households and £429,000 (22%) for a medium-sized manufacturer in 2020 (2012 prices). Overall, the analysis demonstrates that the total potential increase could therefore be up to £189 for households and £608,000 (32%) for a medium-sized manufacturer in Scotland in 2020 (2012 prices).

11. These estimates are based on recovering the costs of five existing schemes which cover infrastructure investment, renewable generation and support for remote communities – they do not take into account what might happen to other cost components of energy bills. In addition, the analysis does not quantify the potential costs associated with Scotland's share of historic energy liabilities, which could result in further upward pressure on energy bills in Scotland depending on how these were paid for.

Table 1: Estimated household energy bill impacts in Scotland in 2020 (£, 2012 prices).

Cost Component	Low	High
Electricity Transmission Network Costs	£30	£50
Hydro Benefit Replacement Scheme	£5	£5
Statutory Independent Undertakings (SIUs)	£3	£3
Small-scale Feed-in-Tariffs	£0	£2
Renewables Obligation and Contracts for Difference support costs	n/a[4]	£129
Total	**£38**	**£189**

Source: DECC Modelling.

Table 2: Estimated medium-sized manufacturer energy bill impacts in Scotland in 2020 (£, 2012 prices).

Cost Component	Low	High
Electricity Transmission Network Costs	£91,000	£154,000
Hydro Benefit Replacement Scheme	£16,000	£16,000
Statutory Independent Undertakings (SIUs)	£3,000	£3,000
Small-scale Feed-in-Tariffs	£0	£6,000
Renewables Obligation and Contracts for Difference support costs	n/a	£429,000
Total	**£110,000**	**£608,000**

Source: DECC Modelling.

DECC prices and bills modelling

12. The household bill estimates (real 2012 prices) were calculated using the DECC average energy prices and bills model based on the estimated costs associated with each component cost in Scotland in 2020. Further information on each component cost estimate in 2020 is provided in the following sections of this annex. The analysis is consistent with the approach in DECC's publication 'Estimated impacts of energy and climate change policies on energy prices and bills', of March 2013.[5] Although the overall approach has not changed since the March report, the modelling has been updated with DECC's latest energy projections in the Updated Energy and Emissions Projections report of September 2013,[6] and the assumptions in the EMR Delivery Plan Impact Assessment of December 2013.[7]

[4] It is not possible to estimate a low end of the range for policy costs associated with RO and CfD support payments due to the uncertainty around renewables trading in 2020.

[5] Estimated impacts of energy and climate change policies and energy prices and bills, Department of Energy and Climate Change, March 2013.

[6] Updated Energy and Emissions Projections, Department of Energy and Climate Change, September 2013.

[7] Electricity Market Reform Delivery Plan, Impact Assessment, Department of Energy and Climate Change, December 2013.

13. The methodology assumes that costs incurred by energy suppliers are passed on in full to consumers (households and non-domestic consumers) and spread over relevant consumption on an equal per MWh basis. At the UK level, this implies, for example, for policies impacting electricity, that given the respective shares of total electricity consumption, households will face approximately one-third of the total costs of policies to support low carbon electricity, and non-domestic consumers (including businesses, industry and the public sector) the remaining two-thirds. However, it is a decision for energy suppliers how they pass these policy costs on to consumers and the allocation of costs between domestic and non-domestic consumers. The precise method of cost pass through will vary between energy suppliers depending on their own tariff structure and approach to cost mark-up.

14. The methodology also assumes that costs would be recovered from Scottish consumers by energy suppliers in the same way as they are currently at the UK level. The scale of costs, and the pass through to consumers, would depend on the precise nature of policy design in an independent Scottish state.

15. The DECC prices and bills model estimates average UK impacts, and does not include data separately on England, Scotland, Wales and Northern Ireland. In order to estimate costs in Scotland, a Scottish share of projected UK energy consumption was derived, based on historic data on energy consumption (of around 10% each for gas and electricity). This assumes that Scottish energy consumption follows the UK trend going forward – however if consumption was higher in Scotland than implied by this share, costs would be spread over a larger volume, reducing the £/MWh impact (and vice versa).

16. In addition, in order to estimate household bill impacts from the £/MWh costs, the modelling also assumes the average household consumption level is the same as that used for the analysis published in DECC's prices and bills report in March 2013 i.e. 3.0MWh of electricity and 14.0MWh of gas in 2020. These reflect a UK-wide level estimate and account for the impact of energy efficiency policies. While average household consumption in Scotland is likely to differ from this UK average (statistics suggest it is higher on average), this allows a more direct comparison with UK level impacts that have already been published. A medium-sized manufacturer is an example of a medium-sized business user of energy and is defined as consuming around 12,300 MWh gas and 10,100 MWh of electricity in 2020. This is consistent with the levels used in DECC's March 2013 report after accounting for the impact of energy efficiency savings.

Electricity transmission network costs

17. Electricity transmission infrastructure development in Scotland is expanding at a faster rate than the rest of the GB.[8] Currently the Scottish electricity transmission owners plan to invest up to around £6bn (2009/10 prices) over the period 2013/14-2020/21 in transmission projects, including those under construction and planned.

18. The majority (73%) of the costs associated with investment in electricity transmission networks are currently shared with consumers across GB, including Scotland, via Transmission Network Use of System (TNUoS) charges. The remaining 27% of charges are paid for by electricity generators. National Grid as Transmission System Operator collects the TNUoS revenue from generators and suppliers required to reimburse the licensed Transmission Owners (TOs) for investment in their assets. Of the 73% of charges that are collected from suppliers via consumer electricity bills, only a small proportion (~10%) is recovered cost-reflectively on a zonal basis. Around 90% is recovered through the 'residual' element of the tariff which is fixed per MWh supplied across the whole of GB,

[8] Details of Transmission Owner major projects are available at: www.gov.uk

which means that a significant proportion of the costs of investment in Scotland is shared across consumers in the whole of GB.[9]

19. If the costs of investments in electricity networks in Scotland were only recovered from network users in an independent Scotland, it is estimated that it would result in an additional £30 to £50 on household electricity bills, and £91,000 to £154,000 (5-8%) for a medium-sized manufacturer in Scotland in 2020 (2012 prices).

20. The consumer bill estimates above are calculated based on the level of allowed revenue that Ofgem has agreed the two Scottish transmission owners can recover in 2020, which is in the range of £458 million to £731 million (2009/10 prices).[10] The range of allowable revenue is driven by the level of new capital investment that the transmission owners are allowed by Ofgem to make over the period to 2020, which is in the range of £2 billion to £6 billion (2009/10 prices).[11] The final level of investment will be determined by how much of the £4 billion currently categorised as within the 'Uncertainty Mechanism' is ultimately approved by Ofgem after the associated projects have been subject to further scrutiny of capacity requirements and costs.

21. The additional amount of revenue that would need to be recovered from Scottish network users in 2020 is calculated by subtracting an estimate of TNUoS revenue that would be recovered from Scottish users under current GB market arrangements[12], from the level of revenue allowances that Ofgem has agreed with Scottish TOs. The impact per unit of electricity is then calculated by dividing the additional amount of revenue required to be recovered from Scottish network users by projected demand in Scotland in 2020. The impact per Scottish household is then calculated by multiplying the impact per unit by the assumed Scottish consumption per household in 2020. A similar calculation applies to estimate the impact on medium-sized manufacturers.

Gas distribution costs

22. The Statutory Independent Undertakings (SIUs) are 6 remote gas networks that gas network companies are currently obligated to support. There are five SIUs in Scotland and one in Wales. SIUs are owned and operated by licensed gas network companies but are not physically connected to the GB main gas system. There is an assistance arrangement in place as part of a public service obligation that socialises the costs of the gas and transport in SIU areas across all GB gas consumers. This means the SIU consumers do not suffer from prohibitively expensive charges and are able to enjoy access to the competitive GB gas market. This assistance payment is calculated as part of the Ofgem RIIO price control mechanism.

23. Scotia Gas Networks is obliged to transport gas to the Scottish SIUs and is expected to receive approximately £92 million (2009/10 prices) between 2014/15-2020/21. In 2020 the expected assistance amount for SIUs in Scotland will amount to around £11.5 million (2009/10 prices).[13] If the costs were met only by consumers in an independent Scotland instead of being socialised across the whole of the GB it is estimated that it would result in an additional £3 on household bills and £3,000 (0.2%) for a medium-sized manufacturer in Scotland in 2020 (2012 prices).

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9 Final TNUoS Tariffs 2014/15. National Grid, January 2014.

10 RIIO-T1: Initial Proposals for SP Transmission Limited and Scottish Hydro Electric Transmission Limited, Ofgem, February 2012. For the purpose of the bills analysis all figures have been converted to 2012 prices.

11 Ibid.

12 Estimates consistent with National Grid's Project TransmiT. Project TransmiT, Ofgem website.

13 Gas Transporter License, Special Conditions National Grid Gas Plc (NTS), July 2013. For the purpose of the bills analysis the charges have been converted to 2012 prices.

Electricity distribution costs

24. In contrast to the supplier element of Transmission Network Use of System (TNUoS) charges which are largely socialised across GB network users, the Distribution Use of System (DUoS) charges vary by region to reflect the level of investment in and operation of local distribution networks. The network companies are incentivised by Ofgem to ensure these charges are the best possible value for money to ensure efficient operation. These incentives and the performance of network companies against them are regularly monitored by Ofgem.

25. However, recognising the high distribution costs in the north of Scotland, the Hydro Benefit Replacement Scheme was introduced in the Energy Act 2004. The purpose of the Scheme is to reduce the electricity distribution network use of system charges for consumers in the north of Scotland as otherwise they would be significantly above those in the rest of GB. National Grid recovers an assistance amount from all electricity consumers across GB which is then passed to the electricity distribution network owner in the north of Scotland in order for distribution charges for consumers in the area to be reduced.

26. In 2013/14 the Scheme provided around £54 million of support to consumers (households and non-domestic) in the north of Scotland adding less than £1 on average to household bills across GB.[14] The Energy Act 2004 sets out that annual payments are to be adjusted for inflation and any under/over recovery in the previous year. Therefore, assuming costs remained constant in real terms and were met only by consumers in an independent Scotland, it is estimated it would result in around an additional £5 on household bills and £16,000 (0.8%) for a medium-sized manufacturer in Scotland in 2020 (2012 prices).[15] These estimates are calculated by dividing the total cost of the scheme in 2020 by the total units of Scottish electricity demand projected in 2020 and applying this £ per MWh cost to the relevant consumption levels for households and medium-sized manufacturers in 2020. These costs are then compared to estimated costs under the existing arrangements.

Support for small scale renewables development

27. The UK Government introduced the Feed-in Tariffs (FITs) scheme in 2010 to support organisations, businesses, communities and individuals generate low-carbon electricity using small-scale (5 megawatts (MW) or less total installed capacity) systems in Great Britain. As at the end of 2013, total FiT capacity in GB stood at 2.2 GW, 12% of all UK renewable electricity capacity.

28. Regional FITs data are only available for capacity (not spend or generation). To estimate the funding that would be required in Scotland to support FiTs deployment in 2020, Scotland's current share of GB capacity deployed under FITs has been calculated from deployment statistics for each of the main FITs technologies (solar PV, wind, hydro and anaerobic digestion).[16] The current share of capacity for each technology is then applied to spend projections for that technology in 2020 to give an estimate of Scottish FITs spend. Using this methodology, we calculate that Scottish FITs spend will comprise 10-12% of total FITs costs by 2020.

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[14] Charging Statement, Assistance for Areas with High Electricity Distribution Costs Scheme, Effective from 1 April 2013. National Grid,

[15] The bill impact analysis is based on an annual cost of £52 million in 2012 as calculated from the 2011/12 and 2012/13 charging statements in order to maintain consistency with all other bill impacts which are presented in 2012 prices.

[16] Sub-regional Feed-in Tariffs Statistics, Department of Energy and Climate Change, December 2013.

29. The range reflects that some installations do not have geographical locations allocated within the dataset and consequently the shares have been estimated based on a total capacity figure both including and excluding the unallocated installations (the lower end reflecting the inclusion of unallocated installations and vice versa).

30. Based on estimated spend on FiTs in 2020, if Scottish electricity consumers (households and non-domestic) had to pay for the supports costs associated with this share of deployment, it is estimated that the impact on energy bills would be negligible at the lower end of the range, or at the top end result in around an additional £2 to average household bills and £6,000 (0.3%) on bills for a medium-sized manufacturer in Scotland in 2020 (2012 prices).

Support for large scale renewables development

31. A range of financial incentives have been developed by the UK Government to provide investors with the support they need to invest in renewable energy, such as the Renewables Obligation (RO) and the forthcoming Contracts for Difference (CfDs). Under the current RO some 28% of the support – around £560 million of a £2 billion total in 2012/13 – went towards funding Scottish renewables projects even though only around 10% of UK electricity sales are in Scotland.

32. The current Scottish Government has an ambition to deliver the equivalent of 100% renewable electricity as a share of annual gross electricity consumption in 2020. If Scottish electricity consumers (households and non-domestic) had to pay for all of this renewable generation in 2020 at the levels of support currently envisaged then the estimated total cost to be met in 2020 could be around £1.8 billion (2012 prices).[17] The analysis suggests that if these support costs were paid solely by electricity consumers (households and non-domestic) in Scotland instead of being shared across the larger UK consumer base, it would result in up to an additional £129 on household bills and £429,000 (22%) for a medium-sized manufacturer in Scotland in 2020 (2012 prices).

33. As outlined in the previous section on security of supply, in order to generate 100% of renewable electricity generation in 2020, it is estimated that Scotland would require around 15.6GW and 41TWh of renewable capacity and generation respectively. These high level projections are broadly consistent with analysis published by the Scottish Government.[18]

34. To calculate the estimated £1.8 billion of RO and CfD support costs associated with delivering this volume of renewables, it was necessary to make informed assumptions on the allocation of projected renewable capacity between Scotland and the remainder of GB. The National Grid Analytical Report that accompanied the EMR Delivery Plan provides scenarios around total GB renewable capacity in 2020.[19] Consistent with Scenario 1, DECC estimated total capacity in Scotland using assumed country technology splits based on a report by Arup 2010,[20] the Renewables Energy Planning Database and DECC Office for Renewable Energy Development (ORED) intelligence. However, total renewable generation under this assumed allocation results in only around 32TWh of renewable generation in Scotland in 2020, less than the estimated 41TWh required to achieve the Scottish Government's renewable electricity target.

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[17] DECC Modelling. The methodology used to calculate this estimate is described in the remainder of this section of the annex.

[18] Electricity Generation Policy Statement – 2013, Scottish Government, June 2013.

[19] Electricity Market Reform, National Grid Analytical Report, Department of Energy and Climate Change, December 2013.

[20] Review of generation costs and deployment potential of renewable electricity technologies in the UK, Study Report by Arup, Department of Energy and Climate Change, October 2011.

35. In order to remain consistent with the Scottish Government ambition of 100% renewables by 2020, the capacity split for particular technologies was adjusted upwards (specifically for onshore wind, tidal and wave). For instance, while DECC intelligence suggested around 62% of the estimated onshore wind capacity in the EMR Delivery Plan baseline projection could be deployed in Scotland, this was adjusted upwards to 77%. Likewise, DECC increased assumed generation from wave and tidal from around 75% and 70% respectively to 100% for both technologies. Therefore, the assumed renewable technology breakdown in Scotland for the purposes of the bills analysis is as reported in tables 3 and 4 below for capacity and generation respectively.

36. It should be noted that the assumed mix of technologies partly determines the total support costs payable due to different RO support bands and CfD Strike Prices for each technology. If for example, there was more onshore wind and less offshore wind generation assumed in 2020, support costs and consequently household bill impacts in Scotland would be reduced and vice versa.

Table 3: Projected renewable electricity capacity in Scotland by energy source in 2020 (GW)

	England and Wales	Scotland	% of GB total
Onshore Wind	2.9	9.5	77%
Offshore Wind	7.2	3.0	29%
Landfill	0.9	0.0	0%
ACT, biofuels, bioliquids,	2.3	0.4	13%
Solar PV	2.6	0.1	4%
Wave and Tidal	0.0	0.1	100%
Hydro	0.1	1.6	96%
Sewage	0.2	0.0	8%
Conversion and co-firing	1.7	0.0	0%
Geothermal	0.0	0.0	20%
Total	**17.8**	**14.7**	**45%**

Source: DECC modelling

Note: This table shows total estimated capacity under the RO and CfDs, total capacity including small scale FiTs in Scotland is estimated to be 15.6GW

Table 4: Projected renewable electricity generation in Scotland by energy source in 2020 (GWh)

	England and Wales	Scotland	% of GB total
Onshore Wind	6,000	24,000	80%
Offshore Wind	20,500	8,500	29%
Landfill	4,300	Less than 100GWh	0%
ACT, biofuels, bioliquids	11,200	1,900	14%
Solar PV	2,600	100	4%
Wave and Tidal	Less than 100GWh	300	100%
Hydro	200	4,800	96%
Sewage	800	Less than 100GWh	8%
Conversion and co-firing	10,500	Less than 100GWh	0%
Geothermal	100	Less than 100GWh	20%
Total	**56,200**	**39,600**	**41%**

Source: DECC modelling

Note: The table shows total generation of around 40TWh, this is consistent with Scotland achieving 100% renewables as a proportion of gross consumption in 2020 of around 41TWh, when small scale FITs with assumed generation of around 1TWh is included.

37. As outlined above, the projected volume of generation from each renewable technology in Scotland is the basis for the estimated £1.8 billion in total support costs. Assumptions on CfD Strike Prices and RO Certificate bands for generators in Scotland and the wholesale electricity price in 2020 are consistent with the modelling undertaken for the EMR Delivery Plan.[21] No estimate has been made of how the level of support provided to individual renewable technologies may change in an independent Scotland.

38. It is acknowledged that the above scenario is just one plausible generation mix consistent with Scotland achieving its 100% renewable electricity target. For example, the Scottish Government has published an alternative generation mix scenario for 2020 as part of the Electricity Generation Policy Statement[22] as informed by analysis on the electricity sector in Scotland.[23] However, it is not possible to make a robust assessment of the support costs associated with this generation mix as the capacity and generation projections are presented only in 5-yearly intervals. This means that it is not clear the dates at which individual projects are assumed to commission and therefore which RO support bands or CfD Strike Prices to apply to each. However, it is likely that total support costs in 2020 would be significantly higher than the £1.8 billion estimate which results from the DECC assumed mix, due to the higher assumed deployment levels of more expensive technologies, such as offshore wind, wave and tidal projects. This would suggest that household and business energy bills would therefore be even higher in Scotland in the event of independence under the Scottish Government projection.

[21] Electricity Market Reform, National Grid Analytical Report, Department of Energy and Climate Change, December 2013.

[22] Electricity Generation Policy Statement – 2013, Scottish Government, June 2013.

[23] Scottish Generation and Power Flows, SKM / Scottish Government, November 2011.

39. As outlined in the paper, the Scottish Government may look to trade renewable electricity with other EU Member States if they had capacity to do so, in order to offset to some extent the estimated additional £1.8 billion of costs in 2020 that could arise from delivering their 100% renewable electricity target. It is not possible to predict what the price of renewable credits will be as it will depend on supply and the overall demand from Member States who have not met their renewable energy targets in 2020.