

Consultation on Review of ROS (Support for Wave and Tidal Power) 2006

Introduction

1. The Scottish Executive is fully committed to the continued development of renewable energy across Scotland. This commitment recognises the potential environmental and economic benefits that renewable energy can bring. Scottish Ministers have set challenging targets for the generation of electricity from qualifying renewable energy sources - 18% of electricity generated in Scotland to be renewables electricity by 2010, rising to 40% by 2020.

2. The Renewables Obligation (Scotland) or ROS, is the main legislative means through which this objective is being pursued, and has been in force since April 2002. It runs in parallel with near identical Obligations governing the supply of electricity in England and Wales, and (more recently) in Northern Ireland. The ROS operates by obliging licensed electricity suppliers to provide an increasing proportion of electricity which they supply to customers in Scotland from eligible renewable resources.

3. Since its introduction, we have conducted a number of consultative reviews with stakeholders examining the ways in which the ROS is structured and its performance. Subsequently, these reviews have led to a number of relatively minor amendments to the ROS. The most recent of these reviews took place last year, and a suitably amended ROS came into effect on 1 April 2006.

4. As part of our preliminary consultation last year, we asked whether the ROS should be amended to provide additional support to particular technologies, such as wave and tidal energy. Although we did not pursue this issue any further during last year's review, our Ministers announced their intention to examine the nature and level of support required by wave and tidal generators, with a view to consulting during 2006 on the amendments which would be required to deliver such support. This preliminary consultation paper is therefore focused on the means by which the ROS might be amended to support increased generation of electricity from wave and tidal sources.

5. The changes which might be made in support of wave and tidal generation would be made to the ROS only. Whilst this is at odds with the principle upon which the UK Obligations have been based up until now, it reflects the scale of the potential which exists for marine generation in Scotland. That potential is enormous; by providing additional support for wave and tidal power under the ROS, we aim to promote greater diversity and security in the supply of electricity in Scotland, while accelerating progress towards our national and international targets for renewable generation and reductions in greenhouse gas emissions. Consequently, our Ministers are determined to provide visible, long term support for early commercial projects.

6. Responses to the issues and the specific questions raised by this document should be sent by **Thursday 3 August** to the following address:

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7. We recognise that there will be a great deal of interest in these proposals, and a number of questions which recipients may wish to discuss with us directly. We plan to engage as fully and as openly as possible with all our stakeholders during this consultation period, and are happy to be approached directly at any time.

8. We would be grateful if you could clearly indicate in your response which questions or parts of the consultation paper you are responding to as this will aid our analysis of the responses received. This consultation, and all other Scottish Executive consultation exercises, can be viewed online on the consultation web pages of the Scottish Executive website at <http://www.scotland.gov.uk/consultations>. You can telephone Freephone 0800 77 1234 to find out where your nearest public internet access point is.

Handling your response

9. We need to know how you wish your response to be handled and, in particular, whether you are happy for your response to be made public. Please complete and return the **Respondent Information Form** (enclosed with this consultation paper at Annex A) as this will ensure that we treat your response appropriately. If you ask for your response not to be published we will regard it as confidential, and we will treat it accordingly.

10. All respondents should be aware that the Scottish Executive are subject to the provisions of the Freedom of Information (Scotland) Act 2002 and would therefore have to consider any request made to it under the Act for information relating to responses made to this consultation exercise.

Next steps in the process

11. Where respondents have given permission for their response to be made public (see Annex A), these will be made available to the public in the Scottish Executive Library and on the Scottish Executive consultation web pages. We will check all responses where agreement to publish has been given for any potentially defamatory material before logging them in the library or placing them on the website. You can make arrangements to view responses by contacting the SE

Library on 0131 244 4565. Responses can be copied and sent to you, but a charge may be made for this service.

What happens next ?

12. Following the closing date, all responses will be analysed and considered along with any other available evidence to help us reach a decision on the issues identified within this paper. The responses received will inform progress towards any amendments to the ROS, which (once agreed) we would plan to bring into force on 1 April 2007.

State Aid Position

13. In accordance with State aid rules, the current UK renewables obligation scheme was notified to the European Commission in July 2000 for its approval.

14. A State Aid is defined under Article 87(1) of the EC Treaty as any public resource given selectively to an undertaking that could potentially affect competition and intra-community trade. The Commission considered that the redistribution of buy-out funds to electricity suppliers, as under the Obligations at present, constituted State aid to electricity producers and potentially also to electricity suppliers. However, as the scheme met the criteria for green certificate schemes set out in the Commission's environmental guidelines, it was approved: **United Kingdom Renewables Obligation and Capital Grants for Renewable Technologies – N504/2000**. A number of amendments have since been made to the scheme, all of which have been notified to and approved by the Commission.

15. Any further material amendments arising from the current proposals in this consultation paper would similarly have to be notified to and approved by the Commission. In particular, it would be necessary to demonstrate that changes to the scheme were justified and did not result in over-compensation to recipients of the buy-out funds. We will shortly be discussing the compatibility of the options discussed in this consultation paper with Commission officials.

Comments and complaints

16. If you have any comments about how this consultation exercise has been conducted, please direct them to us using the contact details at paragraph 6.

Support for Wave and Tidal Generation

17. Since it came into being in April 2002, the ROS has been extremely successful in stimulating the growth and development of renewables in Scotland. Principally, it has encouraged the growth and development of onshore wind. Indeed, the Executive has granted consent to around 1.5 GW of onshore wind capacity over the last 4 years. The ROS has also been successful in encouraging the upgrading of existing hydro electric power stations and the development of new, smaller hydro schemes. In total, Scotland now generates around 12% of its electricity from renewable energy resources.

18. But while the ROS has performed successfully in helping increase capacity from these established and lower cost renewable technologies (as it was indeed designed to do), it provides insufficient incentive for emerging technologies such as wave and tidal power. Scotland's potential resource in these areas is very great, in both UK and European terms. Our Ministers are clear that, notwithstanding the recent and welcome introduction of support for wave and tidal power by the Department of Trade and Industry (DTI)¹, the sector requires a more extensive, long term market pull of the type that only a mechanism such as the ROS can offer if it is to develop in this country in a way which makes any significant use of that potential.

19. In our previous consultation paper, published in April 2005, we detailed the importance placed by Ministers and Parliament in Scotland on developing wave and tidal power (as part of a diverse range of renewable technologies), and asked whether or not the ROS should be amended to channel additional support towards generation from these sources.

20. That paper hypothesised that support might be provided through the award of additional or multiple ROCs to wave/tidal output; whilst this change would be possible to achieve, it would require changes to the Electricity Act 1989 (primary legislation) to enable this option to be implemented under the ROS. Given the current opportunities for marine energy development in Scotland we feel that this route would introduce a costly delay into the timescale for implementation. The 'multiple ROC' route is not therefore explored as a support option within this paper.

21. Several respondents to last year's consultation were opposed to such a change being introduced, on the grounds that it would be a departure from one of the key principles upon which the ROS is based (that of supporting the most economic forms of renewable generation), and that it could have a negative impact on investor confidence. Those in favour of amending the ROS explained that large scale deployment of wave and tidal devices was essential to attracting private and utility investment and driving down costs, and that the current support on offer would not be sufficient to achieve this.

22. In response, we acknowledged that whilst differentiating between technologies would represent a departure from the original design of the ROS, this

¹ Full details regarding DTI's Marine Renewables Deployment Fund (MRDF) are available [here](#).

did not seem to us be a clinching argument for retaining the status quo. Equally, while we agreed that investor confidence was vital to the continued success of the market that the ROS has helped establish, our view remains that the market is strong enough to accommodate a carefully designed change of this nature.

23. It is still our view that the existing levels of support available for marine generation do not provide sufficient incentive for developers and potential investors. The sector requires certainty over the availability of long-term support if it is to develop in a way which will meet Ministers' ambitions for wave and tidal energy in Scotland. While we understand that some stakeholders would prefer that any such support be delivered directly to the sector by the Executive outwith the ROS, we do not believe that we could do so at the same time as meeting our commitments to develop the other technologies necessary to produce the diversity of supply to which Ministers are committed.

24. As a result, this consultation paper explores ways in which the ROS might be amended to provide increased support to output from wave and tidal energy devices, with illustrative examples of the main options provided separately at Annex B. The content of this paper is based upon and linked to the emerging outcomes of a study which we have commissioned from Future Energy Solutions (FES) and ILEX Energy Consulting. This study has been aimed at establishing the levels of support that wave and tidal devices might require, and also at exploring the potential effects that our proposals might have on investment and investor confidence elsewhere in the renewables sector. The completed study will be published during the coming weeks.

Options

Option A – Do Nothing

25. This option would involve leaving the ROS unchanged. The effect would be that wave and tidal developers would have to rely on existing support (under DTI's Marine Renewables Deployment Fund, the UK Technology Programme, or the support in kind available thanks to public sector investment at the European Marine Energy Centre in Orkney) to help drive down their costs to the extent that the support currently available under the ROS would be sufficient to allow wave and tidal generation to compete.

26. We do not believe that this is a viable option. The study by FES and ILEX will show that generation from these sources requires additional support (across a wide range, depending on the individual technology) if significant new capacity is to be built during the short to medium term. This backs up findings published this year by the Carbon Trust as part of their Marine Energy Challenge. Whilst the support schemes and initiatives mentioned above are very important, we do not believe that they alone will deliver commercial investment on a significant scale.

27. A variation on this theme might be to delay making any changes until DTI and the Department of Enterprise, Trade and Investment in Northern Ireland (DETI) are in a position to make similar amendments to their own Obligations. While Scottish Ministers agree that making an amendment in unison would be preferable, they are clear that any delay in the provision of clearly defined and long term support

for wave and tidal generation will be detrimental to the development of the technologies and the potentially significant contribution towards renewables targets, diversity and security of supply that they might otherwise make.

Questions:

Do you believe that change to the Obligation is necessary / desirable?

If not, how do you see the development of wave and tidal technology unfolding in Scotland / across the UK?

What would be the effects of amendments to support wave and tidal generation being introduced under only one of the UK Obligations?

Option B – Support “Carved Out” from the Buy-out fund

28. We have considered amending the way in which the ROS Buy-out fund is recycled in order to deliver a guaranteed level of increased payment to suppliers who produce ROCs from wave or tidal sources. The mechanism would be analogous to the operation of the DTI marine deployment fund support route, but the funds would be provided through a ‘carve out’ from the Scottish Buy-out fund.

29. At present, electricity suppliers can choose to comply with their Obligation either by submitting ROCs or making a fixed payment into the Buy-out fund for each unit (ROC) of shortfall. At the end of each Obligation period, the sum collected in the fund is distributed proportionately to suppliers based upon the extent to which they have complied with their Obligation by presenting ROCs.

30. Using this option, suppliers would meet their obligation under the ROS in the usual fashion, i.e. by presenting ROCs or paying the buy-out price; a unit of renewable power from wave or tidal sources would earn the same as any produced from wind or landfill gas. However, the ROS would be amended to allocate enhanced payments to suppliers who presented ROCs from wave or tidal sources. For example, suppliers presenting ROCs from wave or tidal sources might receive a share from the Scottish Buy-out fund equivalent to double or triple the uniform recycling value, but which would not vary with changes in market compliance levels. Once the required marine support was ‘carved out’ from the Scottish Buy-out fund, the remaining recycle payments would be added to the Buy-out fund payments in the E&W and NI markets, with a uniform ROC recycle price calculated across the UK. (The relevant enabling provisions are at section 32A(3) and 32C(4) of the 1989 Electricity Act).

31. Under this approach, ROCs from marine sources would (in effect) command a significantly higher value. This value would be determined by the level at which the additional support level for redemption of such ROCs was set; the level would need to be sufficiently high to ensure that investment in and construction of wave and tidal generation projects took place. The mechanism could be mapped out over a particular period of time (for example, ten years) with separate phases and caps applied to the eligible output and the recycle payment to be made (which would be

higher for output commissioned during the initial phase, but reduce in anticipation of lower unit costs of subsequent investment in wave and tidal generation devices).

32. One advantage of this approach would be that it provided a fixed payment for marine ROCs (subject to agreement on funding levels and availability of the Buy-out fund to support a carve out), and could hence counter some of the uncertainty attached to forecasting ROC and power prices over an investment horizon. It would also reward success, in that these payments would only be “carved out” of the Buy-out fund in the event that wave or tidal capacity is built and the ROCs subsequently presented.

33. A disadvantage of this approach is that, during an Obligation period where a majority of suppliers chose to comply fully with their Obligation by presenting ROCs, there would not be enough money in the Buy-out fund from which to carve out these premium payments. Another drawback is that, should wave and tidal capacity come forward as we hoped, the establishment of a Scottish marine fund operating in this fashion would decrease the level of the Scottish Buy-out fund and hence reduce the contribution to a UK recycle payment for the redemption of ROCs from other technologies. We are reasonably clear in our view that this option should not be pursued.

Questions:

What are your views on option B (using the Buy-out fund to reward marine generation)?

What are the key advantages / disadvantages?

Option C – Banded Obligation

34. Option C essentially involves the creation of a banded obligation on suppliers (with an obligation under the ROS), designed specifically to create a sufficiently strong incentive for the building of wave and tidal generating capacity. This would be done using the powers set out in section 32A(1)(b)-(d) of the Electricity Act 1989. These provisions allow the ROS to specify that electricity generated from specified sources or generating stations must comprise a specified minimum amount of the electricity counting towards a supplier’s obligation (we are fully confident that the primary legislation enables us to make the changes proposed in this document, although we are taking further steps to have the legal position confirmed). In simple terms, the overall obligation of 7.9% in 2007/8 might be amended to specify that 0.5% had to come from wave / tidal sources (leaving 7.4% in respect of all other qualifying technologies). The buy-out price for the marine element of the obligation would initially be set at a higher level than the standard buy-out price to provide a greater incentive to invest in higher cost marine technologies.

35. This separate (or marine) obligation would increase over time in order to set a development path in the same way that the existing ROS has stimulated market development. However, it would be delivered in discrete phases linked to specified output targets with higher buy-out payments into the Buy-out fund for each unit (ROC) of shortfall. The phased targets and buy-out payment levels would be carefully set to encourage development while minimising the ‘deadweight’ cost of

compliance; that is to say, if the ‘marine obligation’ were set at too high a level, suppliers (and hence consumers) could face costs which were out of proportion with the amount of new wave or tidal capacity built to help meet that obligation. Setting the obligation at an appropriate level would stimulate a higher level of demand for electricity generated from those sources, whilst maintaining investor confidence in the Obligation.

36. The alternative for electricity suppliers to compliance with a banded ‘marine obligation’ by submitting marine ROCs would be to make a buy-out payment set at a higher level than the standard buy-out payment (i.e. comprising the standard buy-out payment, plus an incremental “marine” element to cover the additional costs); the value of the marine element would be reduced over time within each phase of support, in line with anticipated reductions in technology costs.

37. This option, namely a banded ROS, is our preferred option. The following sections consider a number of questions, the answers to which would help inform the way in which a banded ROS might be designed and introduced. For example:

- Location of generation, e.g. should qualifying marine ROCs be confined to marine energy sources located in Scotland, or should they be available from marine projects UK wide?
- Should a banded Obligation be split further with specific obligations (and / or differing buy-out prices) for wave and for tidal technologies?
- What are the options for recycling the additional funds that may be received against the marine obligation, and the effects of these on the current system?
- What are the options for phasing such a scheme, and the different effects of these?
- Should there be accompanying rises in the level of the overall Obligation?
- What will be the effects of a marine obligation on the cost to consumers?

Location

38. A marine obligation could be designed to apply only to the production of ROCs awarded to generating capacity located in Scottish waters. This would ensure that the increased returns would only be available to developments located around Scotland. This would fit with Ministers’ policy of injecting as much diversity (and thus security) as possible into Scotland’s renewables portfolio, given that the vast majority of renewables capacity developed to date has been from onshore wind. An increased contribution from marine would also help reduce CO2 emissions from the renewables/energy sector. This would contribute to the overall Scottish target for carbon savings announced recently in Scotland’s new Climate Change Programme. It would also strongly support the case necessary for investing in the upgrades to the electricity grid to enable the connection of wave and tidal capacity around Scotland in areas where available capacity is either currently limited or very weak.

39. Equally, thanks to the scale of the available resource, an obligation which allowed the redemption of wave or tidal ROCs from anywhere in the UK would still present an incentive for developers to locate in Scottish waters. Moreover, developers based both in Scotland and beyond would, in the absence of any geographical restriction, enjoy the same opportunity to manufacture, export and

install their devices in other parts of the UK. However, Scottish suppliers would have to underwrite the full cost.

Questions:

Should a marine obligation be limited to ROCs generated in Scotland only?

What would be the advantages / disadvantages of such an approach?

Technology Specific

40. There are several differences between wave and tidal technologies, not least that the potential available wave resource around Scotland and the UK is significantly higher than that for tidal. Another difference, supported by the data emerging from the study being conducted on our behalf by FES / ILEX as well as the Carbon Trust's Marine Energy Challenge, can be found in the cost of construction for tidal projects as opposed to those of wave, with wave generation generally found to require greater support in the early stages of development. Consequently, we need to consider whether a marine obligation should be broken down such that wave and tidal technology each has an obligation of its own.

41. Purely by way of illustration, if an overall marine obligation was set initially so that 0.5% of a supplier's normal obligation was to be met by marine generation, then this could be split further, so that 0.25% of that obligation was in respect of tidal ROCs and 0.25% for wave ROCs. This would allow us to run the 'tidal obligation' with a smaller buy-out price (if that were appropriate), or for example to impose a larger percentage in terms of a 'wave obligation' during the early years.

42. One advantage of a technology specific approach would be that it would recognise the different average costs found to apply to the development of wave and tidal devices, and ensure that the support phases underpinning each separate obligation were designed to reflect those costs and reduce any deadweight compliance costs. On the other hand, this might be considered a level of micro-management too far, in that the ROS already awards the same level of support to technologies (such as wind) where the costs per project can also vary considerably (depending on resource, location etc).

Questions:

Should a 'marine obligation' distinguish between output from wave and tidal devices?

What would be the advantages / disadvantages of such an approach?

Recycling

43. The UK Obligations were amended with effect from April 2005 to create a single recycling mechanism (and uniform recycling value) for suppliers across the UK. The effect is that whether or not a supplier presents its ROCs under the ROS

and / or under one / both of the other UK Obligations, it will receive the same recycle payment per ROC as every other supplier. This system was introduced both to prevent the possibility of gaming (i.e. suppliers artificially inflating the recycle value under a particular Obligation) and to provide a degree of certainty amongst market players as to the level of return per ROC that they might expect.

44. We recognise that our proposal for a 'marine obligation' poses questions for the continuation of this approach. On the assumption that a marine obligation were introduced for suppliers with an obligation under the ROS only, then these suppliers would face higher compliance costs due either to the higher buy-out price which would be the alternative to presenting wave or tidal ROCs, or to the higher cost of purchasing output from marine energy devices / buying marine ROCs within the market. Assuming that the marine obligation is set at the correct level, then there will always be a degree of shortfall against the target level. The higher buy-out payment for each unit (ROC) of shortfall could lead to a larger Buy-out fund in Scotland than currently exists. On the basis that a marine obligation is introduced under the ROS, we have considered three possible approaches for dealing with recycling. The following options are illustrated more clearly at Annex B (attached separately) .

Recycling Option 1 – “Business As Usual” (Single UK Recycle)

45. As stated above, the UK Obligations were amended with effect from April 2005 to create a single recycling mechanism (and uniform recycling value) for suppliers across the UK. The effect is that whether or not a supplier presents its ROCs under the ROS and / or under one / both of the other UK Obligations, it will receive the same recycle payment per ROC as every other supplier.

46. Under this option, any higher payments accrued in the Scottish Buy-out fund (as a result of suppliers choosing to comply by paying the higher buy-out price) would be included in the UK total Buy-out fund when calculating a uniform UK recycle payment per ROC.

47. Following this route has the administrative simplicity of perpetuating the current UK arrangements as administered by Ofgem, and provides some certainty regarding the level of market return that might be expected from a UK recycle value. However we do not favour this approach as it would seem to place a disadvantage on suppliers faced with a marine obligation under the ROS relative to other suppliers across the UK, given that the former grouping would incur higher compliance whilst all suppliers would receive any resultant higher recycle value.

Recycling Option 2 – Standard UK Recycle plus Separate Scottish “Marine” Recycle based on compliance with Supplier’s Total Scottish Obligation

48. The calculation of a uniform UK recycle value provides benefits through greater transparency and thus liquidity in ROC markets across the UK. This benefit arises from the increased Buy-out funds in other markets (with lower redemption levels) being shared across all ROCs. Whilst conferring a relatively small benefit per presented ROC, it can boost the recycle payments received in smaller, more highly compliant markets than had the recycling values been calculated separately for each market (pre-April 2005).

49. We envisage a possible two stage process under this option. Firstly, a “ROC blind” recycling process would take place on a UK basis - funds are accrued in the Scottish Buy-out fund on the basis of the level of the shortfall in ROCs submitted, multiplied by the standard buy-out payment, regardless of technology under the Obligation. The standard (i.e. non marine) UK recycle value for all ROCs would then be calculated, including the contribution from the Scottish Buy-out fund, and the total ROCs presented in Scotland. This would deliver a uniform recycle payment to all UK suppliers regardless of technology or Obligation; a second stage would then follow, with the additional buy-out payments accrued as a result of the Scottish ‘marine obligation’ (above the standard buy-out payment) recycled back to those suppliers with a marine obligation under the ROS in proportion to the total number of ROCs (not just marine ROCs, but all ROCs) they have presented against the ROS. The recycling of marine buy-out payments could be subject to a high degree of year-on-year volatility as compliance volumes vary with the development of new projects.

50. From initial market modelling, this option could lead to all suppliers seeking to redeem 100% of their non-marine ROS (subject to them having sufficient ROCs to do so) by diverting ROCs which might have been used to meet their other UK Obligations, so as to ensure that they gain the largest share possible of any additional payments for marine energy shortfalls. This is a natural consequence of the signal that a marine obligation will provide; however, under the assumed UK wide non-marine recycling, the relative proportion of ROCs redeemed in any one of the three Obligations would not affect the (non-marine) recycling payments received.

51. This is our preferred option, as it would preserve the inter-market benefit that already exists under the uniform UK recycle calculations, thus preserving a uniform recycle value for all technologies.

Recycling Option 3 - Standard UK Recycle plus Separate Scottish “Marine” Recycle in proportion to the level of marine ROCs presented

52. Option 3 operates in exactly the same way as option 2, but with a variation in the recycling method. Under option 2, the funds accrued from the marine element of the higher buy-out payment are recycled back to all suppliers in proportion to their overall compliance within the Scottish market. However, this could create a perverse incentive for suppliers operating under the ROS and other RO obligations to present more ROCs within the Scottish market in order to gain a greater recycled share of the additional funds that may be accrued. To counter this, recycling of the marine element could be designed to take place in proportion to the marine ROCs that are presented against the marine obligation under the ROS. This would provide a significant incentive for suppliers in Scotland to contract more marine generation, or to buy any excess marine ROCs in the market in order to present against their obligation.

53. However, depending upon the level of the marine obligation that is set, the buy-out price for marine, and the response of the industry to the obligation, some electricity suppliers in Scotland may be able to gain a disproportionate share of the marine generation market. This could be such that they benefit strongly from other suppliers payments into the Buy-out fund at a higher level, and would make it more

difficult to fix the marine buy-out price at an appropriate level. However, it would prevent suppliers being incentivised to present a greater proportion of their ROCs in Scotland, as there would be no material benefit from doing so.

Recycling Option 4– Separate Scottish Recycle

54. Operating a separate Scottish recycle system would separate the ROS market from the UK recycling mechanism and from the intra-market benefit that currently exists. The Scottish recycle payment per ROC redeemed would be calculated in the normal fashion, with the total Buy-out fund including the marine penalties paid against the marine obligation. The result would be a single recycle value for each ROC redeemed under the total obligation in the Scottish market, irrespective of its technology, but returned to suppliers in proportion to the number of ROCs presented under the ROS.

55. This option would again create a perverse incentive to present additional ROCs in the Scottish market in order to gain higher recycle payments from the Scottish Buy-out fund, which would include the higher sums arising from a marine obligation. This would again encourage more ROCs to be presented under the ROS than for the other UK Obligations, to the extent that the recycling payments in these markets rose whilst those in Scotland fell until the same price is achieved overall. Suppliers with an Obligation under the ROS would arbitrage between the three UK Obligations such that the payments they received would be equalised.

Note to Options 2, 3 and 4

56. The increased value of the Buy-out fund that could accrue as a result of a Scottish marine obligation will be directly related to the generation targets that are set (i.e. the size of the marine obligation), the number of marine ROCs presented by suppliers as evidence of compliance, and the level of the buy-out price (or prices, e.g. for wave and tidal generation) that are set as an alternative to submitting marine ROCs.

57. Under Option 2, all UK suppliers (whether or not with a marine obligation) would receive a uniform recycle payment for all ROCs redeemed. Those with a marine obligation under the ROS would then receive an additional payment from the recycling of the marine receipts (i.e. the additional buy-out receipts, above the level of the standard buy-out receipts) in the Buy-out fund in proportion to the number of ROCs submitted against their total obligation under the ROS, including (but not limited to) the marine element. Under this approach, all suppliers with an obligation under the ROS would have an incentive to maximise the number of ROCs presented in order to gain the largest possible share of the marine recycling.

58. Under Option 3, suppliers with a marine obligation will receive a uniform recycle payment per ROC that will be enhanced by the marine buy-out payments in accordance with the proportion of marine ROCs that they submit. Suppliers redeeming marine ROCs will benefit from the additional recycling payment, but suppliers without marine ROCs could be disadvantaged. On average, this option would increase the recycling payment per marine ROC redeemed, but the year-on-year volatility in recycling values resulting from compliance with the relatively small

marine obligation might make it more difficult for wave or tidal developments to secure project finance.

59. Under Option 4, suppliers with a marine obligation will receive a uniform recycle payment per ROC that will be enhanced by the marine buy-out payments. As above, on average, this will increase the recycling payment per ROC presented against the ROS. However, suppliers could respond to this higher value by choosing to redeem a greater proportion of their ROCs in Scotland, so reducing the value of recycling in Scotland, and increasing the value in other markets, until the same value is available in all markets, as under Option 1. It is not clear that this arbitrage presents any advantage or disadvantage on any particular party.

60. Under Options 2, 3 and 4, initial modelling work shows that this results in different (but generally higher) recycling values within the Scottish market under a marine obligation, although this is dependent on the exact levels of the obligation and buy-out price that are used.

Questions:

The level of the buy-out price under a marine obligation may need to be quite high, equivalent to a level of support of several multiples of the current ROC price. Would such high levels (limited to initially low capacity levels) be acceptable within the market framework of the ROS? Are there any other options that would stimulate the market to the same extent?

Should there continue to be a single, uniform recycle payment following the introduction of a 'marine obligation' under the ROS? Would such a mechanism place any suppliers at a disadvantage?

Should there be a two stage recycling process, with a UK recycle being followed by a second recycle of the additional payments accrued under the marine obligation to suppliers with an obligation under the ROS?

Should there be a single (separate) Scottish recycle payment to suppliers with an obligation under the ROS, including both the marine and non-marine buy-out payments?

Should the recycling of the marine obligation buy-out payments be considered on the basis of the number of ROCs submitted by a supplier in respect of its total obligation under the ROS, or would it be more appropriate to recycle the marine buy-out receipts on the basis of the number of marine ROCs submitted by a supplier in respect of its marine obligation?

What would be the advantages / disadvantages of each approach?

Are there other, better approaches?

Phasing

61. In our consultation document last year, we talked about the need to ensure that any support delivered to the development of wave and tidal technologies under the obligation was carefully calibrated and controlled. This would be to ensure that any support was pitched at an appropriate level (i.e. sufficient to incentivise new build, but not to the extent that it would be overly costly for consumers or destabilising for the overall market). We believe that support would also need to be designed to apply to a carefully selected phase or phases of capacity and to be introduced in distinct phases between clearly established dates. This would have the advantage of setting out a clearer path of long-term financial return for investors and developers, as well as providing greater certainty for other market players regarding the size and impact of our chosen measure.

62. Establishing a marine obligation under the 2007 Order would itself provide a strong signal that will support the development of marine energy technologies, but the obligation would need to be carefully constructed in order to promote the development of actual projects. Depending on the market readiness of marine energy devices, a marine obligation could be perceived as an unfair burden on suppliers if initial targets were overly ambitious and projects could not be delivered to enable these to be met, perhaps especially in the early years of operation.

63. The scale of development opportunity available to the marine energy sector will be determined by a combination of the level of buy-out payment that is set, the period of time for which this level exists, the manner in which phases of the Obligation are defined, and the success of the industry in meeting the Obligation that is set. However, it is also vital that a sensible balance be struck between creating a sufficient incentive for the development of new marine capacity and minimising any additional cost to the consumer.

64. The relevant powers to set buy-out prices for the Renewable Obligation (Scotland) Order for the purposes of encouraging the development of marine energy generation are available to the Scottish Executive under Section 32C of the Electricity Act 1989.

65. It would be possible to specify a marine obligation that would be based solely on the output (MWh) to be delivered by suppliers under separate phases. Under section 32C(2)(b) different buy-out payments can be set in relation to different periods. A high buy-out payment would operate during the first phase in order to incentivise development, but this would then reduce to a lower level and would be applied across the required supply levels under both phases. A reducing buy-out payment would acknowledge improvements in technology costs, encourage competition and minimise the costs of compliance in the market. However, this option would not provide a guaranteed buy-out level to be maintained over the life of a marine generation project that could be considered as 'bankable' for financing purposes, unless a future buy-out level and duration period for the second phase of the obligation were defined at the outset.

66. An alternative position would be to specify phases of supply on the basis of the date when the generating station was commissioned, i.e. a generating station

commissioned on or before a certain date would qualify under phase I of an obligation, with a generating station commissioned after the phase I date qualifying as phase II. Section 32C(2)(c) allows different buy-out payments to be set for different sources of electricity or descriptions of generating station. Different buy-out payments would be set for each phase of station, and would be maintained over the life of that phase.

67. A benefit of the output (MWh) approach is that it is independent of generation type and is not time restricted. This allows suppliers to meet their obligation using the most efficient marine energy technology available, or pay the buy-out payment. This option could also potentially assist in creating a larger market for second generation devices as they could be used to meet supply targets under the first or second phase of the marine obligation and may result in re-powering of early developed sites with more efficient machines. This option would only be acceptable if a buy-out payment that would reduce over all of the obligation phases (and thus over the lifetime of a project) does not become a barrier to development.

68. Under the approach of requiring a certain amount of electricity from stations commissioned at certain dates, suppliers would have a more prescriptive scheme under which to operate. Whilst guaranteeing a buy-out payment level over the life of a particular phase, there would be a reducing timescale from the start of the phase over which projects could receive a guaranteed level of support. This also raises a question on whether additional support above the standard market price is required for projects at the end of an obligation period.

69. It is clear that the way in which a marine obligation is constructed or phased will have a strong bearing on the delivery of projects and on the compliance of suppliers with a marine obligation. This raises a number of issues relating to the development path that might be set out within the 2007 Order. Strictly by way of illustration, for example, an Order laid in 2007/8 could be drafted to establish a marine supply obligation beginning from 2008/9 onwards. This would provide some flexibility for suppliers to choose how to meet the following years' obligation and limit deadweight compliance costs that would be incurred if a supply target were set for 2007/8 that could not be met (even in part) by suppliers.

70. To expand on this position, in order to provide a long-term development path for marine energy development under the 2007 Order, we could set out the annual marine obligation for each year until 2015/16 (or beyond) along with the proposed marine buy-out payments for each phase of development. This would provide both the target and incentive to enable growth of the sector. We would make clear our intention to keep actual progress in the sector under review (sufficiently far in advance) and amend the annual step changes accordingly were the obligation levels deemed to be overly ambitious. However, our intention would be that the overall target would remain unchanged.

71. As stated above, the phasing of capacity targets and the associated buy-out payments would have a strong bearing on the delivery of projects and on the compliance of suppliers against the marine obligation. We will continue to develop our thinking on these options based on incoming data from the work commissioned from FES / ILEX, as well as upon feedback to this consultation.

Questions:

Should a marine obligation established in the ROS under the 2007 Order include targets from 2007/08 onwards?

How far in advance should obligation levels be amended based on reviews of actual progress against a marine obligation?

Should a marine obligation be delivered against a single but increasing supply level with a higher buy-out price, or through discrete 'phases' of supply (with lower buy-out prices for successive phases)?

If the latter, how should these phases be defined (e.g. by timescale, with generation commissioned between certain dates, or on an output basis, as described at paragraphs 65-66)?

On the assumption that a marine obligation should operate separately for wave and tidal generation, on what basis should the different buy-out payments and targets be set?

How long should a marine obligation (or each separate phase) remain in place (e.g. 5 years, 10 years?)

Should projects be transferred to successively lower buy-out payments once they have reached the end of the obligation period?

Do consultees have any alternative suggestions as to how separate phases of support might be made to operate?

Size of the Obligation

72. The ROS, in common with the Obligation in England and Wales, is currently set to increase to 15.4% by 2105/16, although remaining in place until 2027 (the Northern Ireland Renewables Obligation, although linked to the GB Obligations has a different and lower profile in view of the relatively higher cost of electricity there). As part of last year's consultation, we asked whether or not the GB obligation levels should be increased beyond the 2015/16 horizon. Many respondents felt that they should, if there were to be sufficiently strong signals regarding returns for projects due to come forward over the short to medium term. Our position following last year's review was that the case for an increase was not yet sufficiently strong, although we would be keeping the situation under review.

73. It could be argued that our proposal for a marine obligation strengthens the case for just such a review. As things stand, a marine obligation would reduce (albeit to a very small extent initially, but rising over time) the size of each Scottish market supplier's 'non marine' obligation under the ROS. As a result, it might be argued that, in order to lessen any perceived squeeze on non marine technologies, the size of the Obligation should be increased straight away in line with the introduction of a marine obligation, or beyond the 2015/16 horizon. However, any

changes to the size of the ROS would raise issues in terms of the cost to consumers in Scotland (see next section).

Questions:

Do you believe that the ROS should be increased to compensate for the introduction of a 'marine obligation'?

If so, should any increase take effect from now, or should the Obligation be extended beyond the 2015/16 horizon?

What would be the advantages / disadvantages of each course?

Cost to Consumers

74. The theoretical cost to the consumer of the UK Obligations is capped in any given year at the level of the obligation multiplied by the buy-out price for that year (on the assumption that if no supplier presented ROCs against their obligation, they would have no option but to buy-out their obligation level in full). However, in practice, the high returns obtained by some renewable generation projects may reduce that impact.

75. Placing a marine obligation on suppliers under the ROS, with higher buy-out prices than for non-marine generation, would increase the theoretical maximum cost to the consumer by the incremental cost above the standard buy-out price multiplied by the marine obligation in any given year. In addition, there could be an increase in the costs faced by Ofgem in administering the scheme, particularly if introduced solely under the ROS.

76. However, the additional cost to consumers arising from the introduction of a marine obligation could be reduced in the medium to longer term if this measure achieves its desired effect, and help bring another competitive source of renewable generation nearer to the mainstream market, with associated benefit to consumers in terms of increased competition in the generation and supply sectors.

Questions:

Do you have any views on the cost implications for suppliers under the ROS (and therefore consumers) arising from the introduction of a marine obligation?

Do you believe that the introduction of additional costs in this way is justified by the underlying aims of creating a long term market and investment incentive for wave and tidal generation?

Do you have any other views on the cost implications of a marine obligation?

Conclusion

77. We fully understand that the ROS, in common with the other UK Obligations, has operated until now on the basis that it support the most competitive forms of generation, and that it has done so very successfully. However, while the very substantial amount of new capacity that has come forward is very welcome in terms of meeting our renewables targets and helping to tackle climate change, we believe that it is vital to act now to increase the diversity of technologies contributing to our renewable portfolio.

78. The ROS provides just such a means. By marrying its ability to target specific levels of support at individual technologies with the huge wave and tidal generation potential that exists around Scotland, we can continue to make great strides towards meeting our renewable ambitions whilst increasing diversity, competition and security of supply within the renewable generation sector.

79. Our proposals are at an early stage. This consultation process will be vital in addressing the questions that we have listed in this paper (as well as raising additional issues that we have overlooked). During the coming period, we will continue to model the ways in which a marine obligation might operate and the effects that it might have on the operation of the ROC market. We will also continue to liaise widely with stakeholders, Ofgem and our colleagues across the UK Government. Once this consultation period has closed, we will refine our proposal prior to producing a statutory consultation document and draft Order in the autumn.

RESPONDENT INFORMATION FORM - ANNEX A

Please complete the details below and return it with your response. This will help ensure we handle your response appropriately. Thank you for your help.

Name:

Postal Address:

1. Are you responding: (please tick one box)

(a) as an individual (go to Q2a/b and then Q4)

(b) on behalf of a group/organisation (go to Q3 and then Q4)

INDIVIDUALS

2a. Do you agree to your response being made available to the public (in Scottish Executive library and/or on the Scottish Executive website)?

Yes (go to 2b below)

No, not at all (We will treat your response as confidential).

2b. Where confidentiality is not requested, we will make your response available to the public on the following basis (please tick one of the following boxes):

Yes, make my response, name and address all available

Yes, make my response available, but not my name or address

Yes, make my response and name available, but not my address

ON BEHALF OF GROUPS OR ORGANISATIONS:

3 The name and address of your organisation **will be** made available to the public (in the Scottish Executive library and/or on the Scottish Executive website). Are you also content for your **response** to be made available?

Yes

No (We will treat your response as confidential)

SHARING RESPONSES/FUTURE ENGAGEMENT

4 We will share your response internally with other Scottish Executive policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for the Scottish Executive to contact you again in the future in relation to this consultation response?

Yes

No

Annexe B

Market Size	GWh	Assumptions
UK	338,000	Buy out price for non-marine £33
E&W	300,000	Buy out price for marine £120
Scotland	30,000	Obligation level at 7.9% of total electricity supplies
N.I.	8,000	Marine obligation set at 0.5% of total electricity supply

Current UK Market Operation							
Market	Obligation level	Target GWh	% compliance	ROCs	Shortfall (=Target-redeemed ROCs)	Buy out fund (000's)	Recycle value
UK		26,294	68%	17952	8,340	£275,220	£15.33
E&W	7.9%	23,700	69%	16353	7,347	£242,451	£15.33
Scotland	7.9%	2,370	61%	1444	924	£30,492	£15.33
N.I.	2.8%	224	69%	155	69	£2,277	£15.33

General notes

- All figures used within the table are purely illustrative for the purposes of outlining the mechanisms by which different recycling options could be adopted.
- The scenarios presented "without Market response" are "static" in nature in order to illustrate the differences between the recycling options from a common starting point. The second column "with potential market response" accounts for anticipated market reactions to recycle price differences across markets that would result from arbitrage, thus affecting the respective ROCs presented in each market, buy out funds and recycle value for each market. It should be noted that under some options there is no incentive to arbitrage.
- In examining the figures below, it is important to note that whilst the marine buy out payment value (shown above as £120/MWh) is a single value, it is actually the product of two values - the standard buy out payment (£33/MWh) plus a marine premium (£87/MWh).
- For recycling purposes, the standard buy out payment from the total marine buy out payment (along with the number of marine ROCs presented) is included in the UK fund recycling calculations under options 1, 2 and 3 below. Option 1 also includes the marine premium element, whilst under options 2 and 3 the marine premium is recycled separately to suppliers with an obligation under the ROS.
- As the renewables obligation is placed on suppliers operating in each of the England & Wales, Northern Ireland and Scottish Markets, the overall UK compliance level and Target is the product of summing the outputs of the respective markets. Where applicable, a UK recycle value is given.

Illustrative figures for recycling options without a market response							
Recycle Option 1: "Business As Usual" (Single UK Recycle)							
Market	Obligation level	Target GWh	% compliance	ROCs	Shortfall (=Target-redeemed ROCs)	Buy out fund (000's)	Recycle value
UK		26,294	68%	17952	8,342	£284,421	£15.84
E&W	7.9%	23,700	69%	16353	7,347	£242,451	£15.84
Scotland (non marine supply)	7.4%	2,220	63%	1399	821	£27,093	£15.84
Scotland (marine supply)	0.5%	150	30%	45	105	£12,600	£15.84
Scotland (total)	7.9%	2,370	61%	1444	926	£39,693	£15.84
N.I.	2.8%	224	69%	155	69	£2,277	£15.84

Illustrative figures for recycling options with a potential market response							
Recycle Option 1							
Target GWh	% compliance	ROCs	Shortfall (=Target-redeemed ROCs)	Buy out fund (000's)	Recycle value		
26,294	68%	17952	8,342	£284,421	£15.84		
23,700	69%	16353	7,347	£242,451	£15.84		
2,220	63%	1399	821	£27,093	£15.84		
150	30%	45	105	£12,600	£15.84		
2,370	61%	1444	926	£39,693	£15.84		
224	69%	155	69	£2,277	£15.84		

Recycle Option 2: Standard UK Recycle plus Separate Scottish "Marine" Recycle in proportion to total ROCs presented in Scotland.							
Market	Obligation level	Target GWh	% compliance	ROCs	Shortfall (=Target-redeemed ROCs)	Buy out fund (000's)	Recycle value
UK		26,294	68%	17952	8,342	£275,286	£15.33
E&W	7.9%	23,700	69%	16353	7,347	£242,451	£15.33
Scotland (non marine supply)	7.4%	2,220	63%	1399	821	£27,093	£15.33
Scotland (marine supply)	0.5%	150	30%	45	105	£12,600	£6.33
Scotland (total)	7.9%	2,370	61%	1444	926	£39,693	£21.66
N.I.	2.8%	224	69%	155	69	£2,277	£15.33
Marine buy out payments above standard penalty						£9,135	
Total ROCs presented in Scotland						1444	
Marine recycle per ROC redeemed in Scotland						£6.33	
Standard UK recycle element						£15.33	
Total recycle per ROC to suppliers under the ROS						£21.66	

Recycle Option 2							
Target GWh	% compliance	ROCs	Shortfall (=Target-redeemed ROCs)	Buy out fund (000's)	Recycle value		
26,294	68%	18062	8,232	£271,656	£15.04		
23,700	66%	15642	8,058	£265,914	£15.04		
2,220	100%	2220	0	£0	£15.04		
150	30%	45	105	£12,600	£4.03		
2,370	96%	2265	105	£12,600	£19.07		
224	69%	155	69	£2,277	£15.04		
Marine buy out payments above standard penalty						£9,135	
Total ROCs presented in Scotland						2265	
Marine recycle per ROC redeemed in Scotland						£4.03	
Standard UK recycle element						£15.04	
Total recycle per ROC to suppliers under the ROS						£19.07	

Recycle Option 3: Standard UK Recycle plus Separate Scottish "Marine" Recycle in proportion to the level of marine ROCs presented.							
Market	Obligation level	Target GWh	% compliance	ROCs	Shortfall (=Target-redeemed ROCs)	Buy out fund (000's)	Recycle value
UK		26,294	68%	17952	8,342	£275,286	£15.33
E&W	7.9%	23,700	69%	16353	7,347	£242,451	£15.33
Scotland (non marine supply)	7.4%	2,220	63%	1399	821	£27,093	£15.33
Scotland (marine supply)	0.5%	150	30%	45	105	£12,600	£203.00
Scotland (total)	7.9%	2,370	61%	1444	926	£39,693	£15.33
N.I.	2.8%	224	69%	155	69	£2,277	£15.33
Marine buy out payments above standard penalty						£9,135	
Marine ROCs redeemed in Scotland						45	
Marine recycle per Marine ROC presented in Scotland						£203	
Standard UK recycle element						£15.33	
Recycle to suppliers not presenting Marine ROCs						£15.33	
Total recycle to suppliers presenting Marine ROCs						£218.33	

Recycle Option 3							
Target GWh	% compliance	ROCs	Shortfall (=Target-redeemed ROCs)	Buy out fund (000's)	Recycle value		
26,294	68%	17952	8,342	£275,286	£15.33		
23,700	69%	16353	7,347	£242,451	£15.33		
2,220	63%	1399	821	£27,093	£15.33		
150	30%	45	105	£12,600	£203.00		
2,370	61%	1444	926	£39,693	£15.33		
224	69%	155	69	£2,277	£15.33		
Marine buy out payments above standard penalty						£9,135	
Marine ROCs redeemed in Scotland						45	
Marine recycle per Marine ROC presented in Scotland						£203	
Standard UK recycle element						£15.33	
Recycle to suppliers not presenting Marine ROCs						£15.33	
Total recycle to suppliers presenting Marine ROCs						£218.33	

Recycle Option 4: Separate Scottish Recycle							
Market	Obligation level	Target GWh	% compliance	ROCs	Shortfall (=Target-redeemed ROCs)	Buy out fund (000's)	Recycle value
UK		26,294	68%	17952	8,342	£244,728	
E&W	7.9%	23,700	69%	16353	7,347	£242,451	£14.82
Scotland (non marine supply)	7.4%	2,220	63%	1399	821	£27,093	£21.16
Scotland (marine supply)	0.5%	150	30%	45	105	£12,600	£6.33
Scotland (total)	7.9%	2,370	61%	1444	926	£39,693	£27.49
N.I.	2.8%	224	69%	155	69	£2,277	£14.82
Non-Marine + Marine buy out payments						£39,693	
Total ROCs redeemed in Scotland						1444	
Total recycle per ROC to suppliers under the ROS						£27.49	

Recycle Option 4							
Target GWh	% compliance	ROCs	Shortfall (=Target-redeemed ROCs)	Buy out fund (000's)	Recycle value		
26,294	69%	18070	8,224	£252,549			
23,700	68%	16116	7,584	£250,272	£15.52		
2,220	79%	1754	466	£15,378	£10.47		
150	30%	45	105	£12,600	£5.08		
2,370	76%	1799	571	£27,978	£15.55		
224	69%	155	69	£2,277	£15.52		
Non-Marine + Marine buy out payments						£27,978	
Total ROCs redeemed in Scotland						1799	
Total recycle per ROC to suppliers under the ROS						£15.55	