# Financing Wind Beyond 2010

# Addendum to Possible Solutions Report

## October 2003

This is an independent study commissioned by the British Wind Energy Association.
**It DOES NOT REPRESENT the views of the BWEA, its members, or of those companies involved in the survey.**

This report is produced as part of a consultation and discussion process with industry and government.

## GUIDE TO THE STUDY, DISCLAIMER AND THANKS

This study was commissioned by the British Wind Energy Association. It must be emphasised that the views, opinions and analysis contained in this report are entirely those of the author. **This report does not represent the views of the British Wind Energy Association or its members.**

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## SYNOPSIS

Following the publication of the "Financing Wind Beyond 2010" study the author and the BWEA have been engaged in a wide-ranging consultation with BWEA members and other stakeholders on the possible solutions suggested in the published report.

The feedback has been highly construction and so to continue to push the debate forward (particularly as our minds turn to the BWEA 25 conference in Glasgow at the end of October) this report highlights a small number of key issues, which have been raised since the publication of the study.

These issues refer particularly to the "Vintage ROC 'n' Roll" scheme, which, as an entirely new entrant to the debate on changes to the Renewables Obligation, has created the greatest amount of feedback and interest.

Included here are also some new ideas, which have arisen as a consequence of our work since the publication of the report.

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## ISSUES RAISED BY VINTAGE ROC 'N' ROLL

### Locking in a High Price for 15 years

Of concern to many who have looked at the Vintage ROC 'n' Roll scheme is that the scheme might lock in a high price for ROCs for the 15-year period after the expiry of the vintage. This might be seen as locking in poor value to the consumer over the long term.

*Deliberately holding back capacity*

This fear is particularly prevalent amongst those who believe that the major utilities (and perhaps others) have the ability and the incentive to hold back new renewable energy developments.

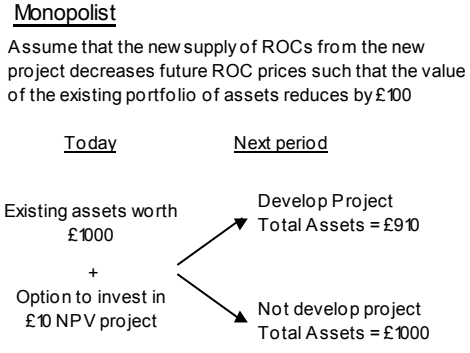
In other words there is a fear that a major utility, which has an existing renewables portfolio will hold back the development of new renewables within a given vintage in order to preserve a high long-term price for its existing portfolio.

This is explored below.

*Is there an incentive for large players to hold back developments?*

As the amount of renewable generation increases the ROC price falls. This obviously reduces the value of existing investments in renewable generation, because they get lower ROC cash flows in the future.

Does this therefore mean that there is an incentive for developers with existing portfolios to hold back new developments?

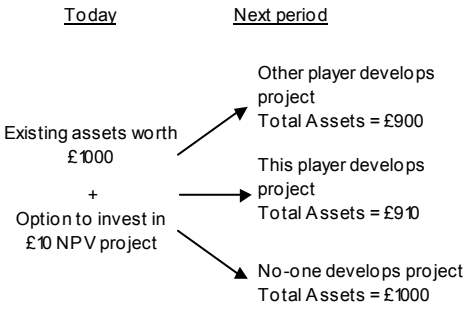



The diagram opposite looks at the situation of a monopolist with an existing portfolio of assets and an option to invest in a new project. That project has a positive NPV, but also has a detrimental impact on the value of the existing assets by reducing future ROC cash flows.

A monopolist therefore will not exercise options on new projects in excess of the point at which the loss in value from the reduction in ROC revenues equals the NPV of the new project.

Player in Multi-player situation

Assume that the new supply of ROCs from the new project decreases future ROC prices such that the value of the existing portfolio of assets reduces by £100




As the number of players in the game increases the stability of the state where no-one develops a project reduces. As this state becomes less stable companies compete to be in the state where it is they who developed the project (I.e. companies actually compete for the new projects)

However the situation where there are multiple players is not the same. If there are multiple players and each one has an existing portfolio of assets and the option to enter into a new project, then the value maximising position for each player is for none of them to develop the project. However, in the case where one of them does develop the project, all the players will compete to be that player as this is a higher value position than not being that developer.

This is a multi-party prisoners' dilemma. In the case of the renewable energy industry one might consider there to be at least six players (the major obligated suppliers) and it is highly unlikely that, without active collusion (of which there is no evidence) the market would be anything but competitive.

Hence given the number of players in the market and its competitive nature, it is hard to support the hypothesis that major companies have an incentive to hold back developments simply because they stand to benefit from the consequent higher ROC prices.

Note that the analysis shown works in general (simply sub in symbols for numbers in the analysis and the state where a developer develops the project always has a higher value than the state where she does not develop and others do – assuming the new project is positive NPV).

*Missing the target by accident*

What then if the market is short of ROCs by the end of a vintage simply because not enough gets built in time?

This, of course, is entirely the point of the vintage ROC scheme. The prospect of a low build-rate, leads to the prospect of very healthy future returns on projects, which leads to increased development activity, greater incentive to overcome institutional barriers, and a higher build-rate.

Under the existing ROC scheme it is the experience of past healthy returns, which is supposed to translate into higher levels of investment in the

future. It is relatively easy to argue that a rational investor is more likely to invest where there is the prospect of high returns in the future, than where there has been experience of high returns in the past.

Again, making the investment incentive under the Renewables Obligation forward looking rather than backward looking is entirely the point of the vintage ROC idea.

**Over-build Risk**

A number of developers have raised the spectre of over-build in a vintage as an issue. This is an entirely valid concern.

If there is over-building in a given vintage then a ROC price of zero could be locked in for the 15 years after the end of that vintage and that would ruin the investments made in that vintage.

If future vintages are shorter and have lower obligation levels then the potential for over-build is amplified (one large wind farm makes a proportionately larger difference in a shorter vintage).

In the original report there was the implicit assumption that either institutional barriers would ensure that the 10.4% was not fully built in the first vintage, or that developers would have sufficiently good information on renewables developments, not to make negative NPV investments in the latter part of the vintage.

If new renewables only come from large-scale wind farm developments (say offshore wind) then these are perhaps reasonable assumptions. If however there is a breakthrough in say distributed renewable power generation then it might be significantly more difficult to obtain good information on the future supply and demand in the ROC market.

Furthermore given a technological breakthrough of any kind, then the cash flows from the Renewables Obligation as they stand today, might actually be sufficient to provide for more than 10.4%

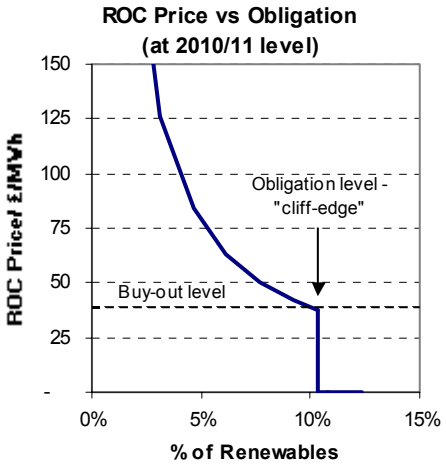
renewables by 2010, but the current system explicitly discourages this by having the prospect of a zero price if the target is exceeded.

The issue of over-build highlights a wider issue in the Renewables Obligation as it is today, which is unrelated to the vintage ROC scheme. The following section of this report explores this issue and suggests a new way of addressing it, independent of the vintage ROC scheme.

The final section explores how a combination of this new idea and the vintage ROC scheme can remove the over-build risk inherent in the vintage ROC scheme, and facilitate the potential for more than 10.4% of power to come from renewables by 2010.

## THE XX% OBLIGATION

This idea is new as far as the author is aware and is considered here in isolation from other possible changes to the Renewables Obligation.

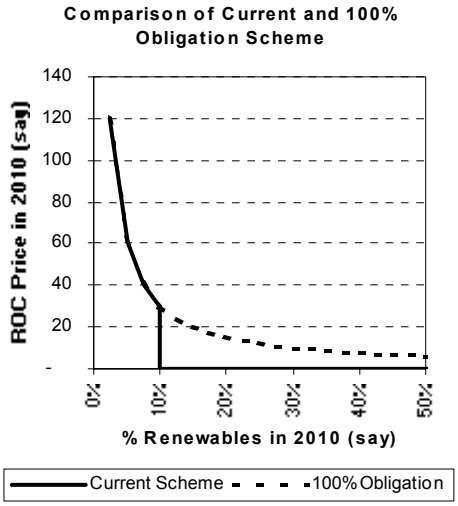



The reason that the Renewables Obligation system needs change in order to give a better long-term incentive for development is partly because there is a perceived "cliff-edge" for the ROC price in the next decade.

As the installed capacity of renewable generation gets to 10.4%, the ROC price falls to zero.

This is entirely an artefact of the way in which the legislation was set up. The actual percentage obligation determines the point at which the ROC price falls to zero. The total amount of money raised from the energy consumer is given by the obligation times the buy-out price in any given year.

Hence the cliff edge can be removed by simply increasing the level of the percentage obligation, and the pricing of ROCs and the cost the consumer can be maintained by reducing the buy-out price accordingly.




For instance, consider the extreme case where the scheme would be changed to have a £3 (RPI indexed) buy-out price and a 100% obligation in 2010 and thereafter.

This raises the same amount of money from the energy consumer each year as the current scheme (10% x £30 = 100% x £3). The value of a ROC would be the same, for generation volumes below 10.4% of supply, as under the current scheme.

However, if the "target" were exceeded ROCs would still have a significant value (as shown they would have a steadily declining value with increasing volume).

100% is the extreme case. XX could be any reasonable number where the buyout price is changed accordingly (i.e. so 100% x £3 = 10% x £30 = 20% x £15 = XX% x £30 x 10% / XX% etc).

Note that what this change is effectively doing is decoupling the obligation level from the target (i.e. the obligation level is set at XX%, but the target which the policy hopes to achieve is still 10% for 2010).

This change removes the general fear of overbuilding under the Renewables Obligation scheme. Under this scheme overbuilding with respect to the target causes a steady decline in the value of ROCs, not a catastrophic one as it would under the current scheme.

Under this scheme suppliers have the potential to redeem ROCs for a greater percentage of their supply portfolio. This may drive contracting and trading liquidity[2]. It also means that suppliers are less exposed to the prospect of being long ROCs if they lose customers in the future.

[2] Actually in the extreme case where the obligation level is set at 100% then there is always the capacity to redeem ROCs. Hence while practically ROCs would still have to be redeemed via a utility in effect anyone would now be able to redeem a ROC (this is something which many people would like to see but for which no-one, to this author's knowledge, has yet found a satisfactory mechanism).

**"Paying the buy-out is not paying a fine – it simply sets an alternative cost"**

*Economics and public perception*

There are obviously some issues of public perception involved in decoupling the obligation level under the Renewables Obligation from the actual target which the policy is trying to achieve.

Policy makers would have to deal with these issues.

Firstly, setting an obligation higher than the actual target looks a little silly. Secondly, in the extreme case of setting a 100% obligation, the buy-out price now applies to all supply and hence it looks far more like a "renewables tax" on electricity supply.

**"It is very strange that there appears to be a punishment for the industry exceeding its targets"**

Thirdly, this scheme makes it completely clear that the buy-out price is not really a fine and the obligation is not really an obligation: It is simply a way of allocating money collected from the consumer to the renewable energy industry.

One positive element in the perception of this idea is that it removes one bizarre aspect of the Renewables Obligation; that the industry is punished for exceeding the target. This allows for the current system to achieve far more renewables than 10.4% from the same cash flows from the customer, if that proves to be economically and technically possible.

*Grandfathering*

This scheme does not include any means for grandfathering. It reduces, but does not remove the risks of future technologies and policies devaluing investments made today.

Note however that the pricing of ROCs below 10.4% of supply is the same under this scheme as under the current scheme and hence the change should not have too great an effect on existing contracts.

*Implementation of the XX% idea alone*

Implementing the XX% Obligation idea removes the immediate issue of the "cliff-edge" for ROC prices next decade. This is achieved without increasing the committed funds from the consumer.

Perhaps this is all that is required for now.

Hence by itself there are many positive elements to this suggested change to the RO system. However, it is perhaps most powerful when combined with the Vintage ROC 'n' Roll scheme.

**OVER-BUILD RISK IN THE VINTAGE ROC 'N' ROLL SCHEME**

**"The problem with Vintage ROC 'n' Roll is that we could be locked in to a zero price for 15 years"**

As noted earlier a significant and valid concern about the Vintage ROC scheme is the possibility of locking in a ROC price of zero for 15 years.

Under the XX% obligation scheme, the pricing of ROCs remains the same below 10.4%, and the cost to the consumer also remains the same. Hence no-one cares what XX% is; it simply determines the point at which the ROC price falls to zero.

Hence XX% is relatively arbitrary[3]. Therefore under the vintage scheme over-build risk can be removed by setting XX% for each vintage to be a value for which it is inconceivable that the obligation could be exceeded during the period of the vintage[4].

*Potential for exceeding the target*

Over-build is, of course, good news for the policy and for the energy consumer. Hence any sensible scheme would allow for the possibility of exceeding the target and getting more renewables within a given vintage for the same money from the consumer.

[3] This is not quite right. The change will have some contractual effects. Many PPAs for ROCs are structured to have separate treatment of the buy-out and smear back and changing the buy-out price and the obligation changes the relative contributions of these two elements to the overall ROC price. However this change is very transparent and it is easy to understand what the equivalent contractual terms are under the changed scheme. The price of a ROC overall does not change.

[4] Note that this would mean that the sum of the obligations under a series of vintages might be more than 100%.

By setting XX% for each vintage in excess of what might reasonably be expected to be achieved in that vintage, the policy is opening up the very real possibility of getting more for its money than it intended.

*It doesn't matter when you set it*

As continually noted, as long as you move the buy-out price and obligation appropriately then the pricing of ROCs and the cost to the consumer stay the same.

Hence you can actually make the change for a given vintage after the expiry of that vintage and it should trouble no-one.

Some people would argue that having both a vintage ROC scheme and a change to the obligation levels and buy-outs is too much change to the system at this stage.

This is perhaps fair comment. However it could be remedied in the following way.

Implement the first vintage of ROCs today based on a 10.4% obligation for 2010. Future vintages need not be declared for some time. Along with declaring the vintage, the government could also state that in the happy event that the target was exceeded by March 31st 2011, the buy-out price and obligation level for the Pre-2011 vintage would be adjusted ex-post to preserve the integrity and liquidity of the ROC market for that vintage, without increasing the cost to the consumer.

Hence if in 2011 we have 15% renewables built then the obligation for the Pre-2011 vintage would be adjusted to be 15% (or perhaps a little higher) and the buy-out price would be adjusted to be £30 x 10.4 / 15 = £20.80 (or the RPI indexed version of this).

This wouldn't change the pricing of ROCs or the cost to the consumer of that vintage, but it would mean there was still reward in ROCs for those who had contributed to successfully overbuilding the target.

Both the XX% Obligation idea alone, and its combination with the Vintage ROC 'n' Roll scheme should both enter the consideration of those looking to form a view on the future of the Renewables Obligation.