Caithness-Moray Needs Case Consultation

Introduction

RenewableUK and Scottish Renewables are the leading trade associations for renewable technologies in the UK and Scotland respectively, and welcome the opportunity to comment on the Caithness-Moray Needs Case. Our memberships comprise the vast majority of generators driving the need for investment grid infrastructure in Northern Scotland.

Summary

RenewableUK and Scottish Renewables support the progression of a timely connection to the Caithness area to alleviate current and future constraints and allow more generators to connect smoothly. It is our conclusion that the standalone HVDC option proposal put forward by Scottish Hydro Electric Transmission (SHETL) to be delivered in 2018/19 is the most appropriate, providing the most benefit for the consumer, for security of supply and in reducing our carbon emissions.

Our particular points are:

- Within the framework of the needs case and the analysis therein, the modelled constrained generation would limit the installed generators' contribution to meeting 2020 renewable energy consumption targets, leading to the use of potentially more expensive options to achieving these targets. In one scenario, this would require a further 350MW replacement capacity.
- Separate treatment should be given to schemes supported under the RO and scheme supported under CfDs when valuing the impact of constraint costs.
- The cost of constraints should not be netted off the cost of foregone support, which would be payable either way.
- Given the large scale of the investment involved, the local, regional and national economies will benefit. The scale and timing of these benefits should be considered as additional benefits in the decision-making process.
- Constraint volumes should take account of outages needed for the different reinforcements. The onshore option is likely to be more disruptive in this respect.
- The offshore option would also be likely to have additional benefits in the form of network security.
- A delayed connection will lead to frustrated development. The Poyry estimate suggests that beyond offshore generation and generation on Shetland, there would seem to be 350MW of capacity identified as under threat from a delay to the reinforcement. As well as wasting development money, this level of drop-off is associated with more than 800 net FTE jobs (including many locally) and £45m UK GVA.
- In reality, there will be further frustrated generation as a result of delays, as growth in generation capacity in the area limits the ability to offer connect and manage contracts to new projects. There are also wider benefits associated with the early connection that should be considered in favour of the HVDC option.

Main response

Cost of Constraints (note that this section relates specifically to, and expands upon, the discussion of constraint costs and volumes in the consultation document and consultant reports).

Summary: The Cost Benefit Analysis (CBA) uses constraint costs as one of the main costs associated with different reinforcement options and timings. We agree that this is an appropriate measure for the purposes of comparison of different options. There are further points we wish to raise in connection with the treatment of constraint costs which weigh in favour of an earlier reinforcement:

(1) ***The impact on meeting 2020 targets should be considered an additional benefit associated with avoiding constraints and bringing forward a quicker connection***

(2) ***There is no case for 'netting off' consumer support for renewables where generation is curtailed and the pricing of bids within the needs case assessment should reflect this***

(3) ***The differing structures of CfD and RO support mechanisms may change the make-up of bid prices for new capacity in the 2017-18 period and beyond.***

(1) Valuing constraints and the impact of meeting renewable energy targets

We propose that the impact of helping meet 2020 targets should be considered an additional benefit associated with avoiding constraints and bringing forward a quicker connection. Noting that the 2020 target relates to consumption- rather than generation or capacity- in the various scenarios within the needs case, curtailed renewable energy would need to be served by alternative sources[1] to ensure compliance with targets.

With this in mind, the modelling of curtailment volumes for each scenario up to 2020 should be used to calculate the equivalent amount of capacity effectively lost through curtailment. Thus, in the Slow Progression (SP) scenario for option 2a, constraint volumes in 2020 are given as 1000 GWh under option 2a. Using the formula:

Capacity = Output/(Run hours *load factor)

and an example load factor of 32.6%[2], suggests that the equivalent of around 350MW of capacity would be curtailed and would therefore be required elsewhere to meet 2020 targets.

Assuming this capacity would be met by onshore wind, the NPV of 350 MW's worth of support under the RO/CfD should be considered an additional cost to the cost of constraints within the needs case assessment.

[1] We agree that the current approach to model CCGT as serving 'replacement energy' (as used in the Poyry report) is appropriate. This point relates not to replacement energy in that sense, but the wider point that a certain number of MWh of supplied energy in 2020 will need to come from renewable sources.

[2] Given on p15 as average for generation behind the B1 boundary pre-2020.

However, it is important to note that owing to the introduction of the Levy Control Framework (LCF) which operates as a cap on levy funded expenditure, the following additional issues should also be taken in to account:

- The limited budget to be allocated to renewable technologies in the forthcoming LCF budget allocation process[3], could mean that the generation shortfall would have to be met by a more expensive option than onshore wind (i.e. a technology in the less-established pot). In such circumstances, the NPV of support for this alternative should be added to the constraints costs in each scenario.
- Where the LCF budgeting process leaves no additional headroom for new generation, then this would contribute to the 2020 target being missed altogether. It is not yet clear what the implications of missing this would be, but infraction proceedings at a cost to the UK taxpayer could ultimately be brought.

(2) Constraint costs: netting off support costs

Adapting Poyry's approach to defining bid prices, we suggest that under both the Renewables Obligation (RO) and Contracts for Difference (CfD), the cost to the consumer for renewables support remains more or less fixed in the long term irrespective of output of individual generators. If this is accepted, then there is no case for netting off consumer support for renewables where generation is curtailed and the pricing of bids in the analysis should reflect this.

Poyry model constraint costs in the following way:

- Bid cost = (foregone support revenue + some uplift) – support revenue otherwise payable
- Offer cost= market reference + some uplift.

Further investigation into the constraint costs (for the purposes of the needs case) under each support mechanism is required in order to build a clearer picture of how the slower deployment scenarios compare to the more optimistic scenarios, and likewise how the proposed timetables for the different reinforcement solutions would be sensitive to this shift.

Renewables Obligation (RO): Ofgem note in their consultation document that total RO costs to consumers remain fixed irrespective of generation and curtailment patterns. This would suggest that it is not appropriate to net off the support revenue otherwise payable from the overall constraint cost. The higher value of bids would weigh in favour of an earlier connection, therefore.

Contracts for Difference (CfD): Ofgem suggest that under CfDs, there is no 'deadweight' effect, inasmuch as the consumer burden is not fixed in the same way as under the RO. However, until Government/the Delivery Body make more budgeting details clear, the exact nature of the consumer cost of CfD support (to be reflected in bid costs) cannot be known for sure. In particular,

[3] Allocation and budgeting does not take curtailed volumes into account. In effect, a volume of capacity is allocated a CFD on the basis of unimpeded generation in line with standard load factors. The whole budgeting process is geared towards achievement of the required level of output to meet 2020 targets. On this basis, curtailed volumes will be 'lost' and need to be replaced elsewhere. Assuming the mature technology pot is allocated on this basis, then it will be fully allocated with no regard for the subsequent lost generation, meaning that more expensive options will need to be pursued.

the policy intent of the LCF budget is to support sufficient renewable generation to meet 2020 targets. A range of £6.9-7.6bn in 2020/21 is currently set out, suggesting that whatever the allocation process yields, something like this figure will constitute the consumer cost of supporting renewables to meet targets[4]. We believe therefore that there is a strong case for treating the medium range for the LCF set out in budgeting documents as the 'fixed cost' to consumers of support under the CfD[5], as the best current estimate of the cost of renewables support (in effect, the required renewable generation would just need to be served by other plant, also supported under the LCF).

If we accept, therefore, that there is indeed something akin to the deadweight effect under the CfD, then for all the post-2017 generation, it does not seem appropriate to net off the consumer support element, which is ultimately payable irrespective of generation of individual generators.

(3) Pricing bids under CfD

Noting uncertainties in the analysis of the consumer burden of renewables support under the CfD, we are of the view that as a minimum, the Poyry's definition should differentiate between RO and CfD in determining the principles of bid prices.

In the model, the expected price of a ROC and LEC are a clear guide to bid pricing under the RO. Extending Poyry's definition of bid prices, under the CfD, developers would be expected to bid in line with the foregone 'top-up' associated with not exporting (i.e. the difference between the day-ahead price achieved in the market and the contracted strike price, plus some uplift).

It is therefore important to recognise within the needs case assessment that under the CfD the variable support cost which would be reflected in the bid price is generally likely to be higher in periods where constraints are more likely. This is because the combined effect of low system demand during periods of highest constraint volumes and "wind cannibilisation" would be likely to decrease the wholesale price.

For the purposes the needs case, therefore, accounting for bid pricing under the different support mechanisms identifies a risk that bid costs could be higher under CfD. Therefore, earlier connection creates the additional benefit of minimising that risk.

Outages and Constraint Modelling

An upgrade to a large stretch of the existing transmission network, as proposed in the AC option, could be more disruptive to power flows during its construction that the HVDC option. Though we are not in a position to model the subsequent impact on constraint volumes, the qualitative case would seem to tell further in favour of the subsea option, which is less disruptive in this respect.

Other matters

System security

[4] We note, for example, that the allocation budget can reassign un-used budget to different years where it is not filled.

[5] Note that the LCF is an overall cap for all renewables policies so would include RO scale projects too.

The offshore option would diversify the transmission routes out of northern Scotland and thereby be beneficial from a system security perspective. In other words, through increasing pressure on the Beauly substation, the onshore option would increase the vulnerability and criticality of Beauly in respect of network failure. We consider this a further benefit of the HVDC option.

Economic benefits

All the consultation materials touch on the question of wider benefits and how these should be treated as part of the needs case. RenewableUK has been pushing for this as part of their engagement with Ofgem and has argued that it is crucial for the general case for grid upgrades. Our view is that grid upgrades should be considered crucial, national infrastructure. Overall TO investment, as set out in the RIIO T1 business plans, has the potential to be a significant driver of local and national growth. We would question whether these points are sufficiently well recognised in the structure of the needs case assessment, where project costs are all treated as sunk costs, rather than investment.

As they relate specifically to the Caithness-Moray needs case, GVA figures should be added as benefits to the respective reinforcement options. In particular:

- CAPEX
- Employment (FTEs created) and exchequer impacts thereof
- Indirect spend

Frustrated Generation

A slower reinforcement option would inevitably lead to delayed or ultimately cancelled generation. We note that given the disparity between the reinforcement dates for the standalone options (2018 in the case of the HVDC and 2024 in the case of AC option), many extant and future planning permissions would have expired by the time the onshore option would have been completed and so would probably have been cancelled.

The KEMA report identifies around 1,765 MW of capacity for which the proposed upgrades are enabling works. Of these, generation on Shetland and Beatrice offshore wind farm account for 80%. KEMA highlights doubts around the connection date for Shetlands generation and notes that a standalone option for Beatrice could be progressed.

Notwithstanding these points, the remaining 350 MW of frustrated generation (mostly onshore wind) would generate around 800 net FTE[6] jobs and £45m GVA for the UK economy[7]. The job creation and economic impact facilitated by the earlier connection should therefore be considered a wider benefit of the earlier connection.

In addition, the scope for frustrated generation will be extended the more generation connects and the ability to offer connect and manage contracts decreases. Though there is no clear visibility on the exact volume of potential capacity that may be affected (though we refer Ofgem to our previous

[6] Full-time equivalent, defined as a job for 10 years. Thus, over a 2 year construction period, each job would count as 0.2 FTE. This means that gross job creation would be much higher.
[7] RenewableUK figures, utilising data from comparable projects in Scotland.

submission on the generation background in the Caithness area), clearly there is an additional benefit associated with the earlier connection in this respect.