



An Coimisiún um  
**Rialáil Cumarsáide**  
Commission for  
**Communications Regulation**

# Response to Consultation and Decision on the 400 MHz Band Spectrum Award

DotEcon Assessment of Responses to  
Document 19/23

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# Assessment of responses to ComReg Document 19/23

Prepared for ComReg

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## 1 Introduction

In March 2019 ComReg published its Draft Decision on the release of spectrum in the 400 MHz band and assessment of responses to ComReg Document 18/92<sup>1</sup>, along with supporting documents from DotEcon Ltd<sup>2</sup> and Plum Consulting.<sup>3</sup>

In response, ComReg received comments from three parties, specifically ESB Networks (ESBN), the European Utilities Telecom Council (EUTC), and the Joint Radio Company (JRC).

In this note, DotEcon (as ComReg's expert economic adviser) sets out its assessment of the comments received in relation to the proposed award format. In particular, we address comments submitted by ESBN in relation to:

- the pricing rule applied for the auction(s) and the potential to use an approach based on opportunity cost; and
- the discount rate used for determining the proposed annual fees.

We discuss each of these in turn.

## 2 Opportunity cost pricing

The proposed auction format is a clock auction with exit bids and a combinatorial closing rule, where winning bidders would be required to pay the amount they bid for any lots they win.

In its response to ComReg Consultation Document 18/92, ESBN suggested that the upfront fees (established in the auction) should instead be determined using a pricing rule based on opportunity

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<sup>1</sup> ComReg Document 19/23

<sup>2</sup> ComReg Document 19/23b

<sup>3</sup> ComReg Document 19/23a

cost, in line with ComReg's standard approach in spectrum auctions and in order to ensure that winners do not overpay.

In ComReg Document 19/23b, DotEcon considered ESNB's views on this matter but proposed to not apply opportunity cost pricing. An important point in this regard is that the proposed auction format and pricing rules would yield prices that are already largely in line with opportunity cost; in broad terms, prices increase up to the point where there is no longer competition, so final prices to be paid are generally reflective of the value of the spectrum to losing bidders (i.e. the opportunity cost of awarding the spectrum to winning bidders).

In addition, a more complicated opportunity cost based pricing rule (as would typically be applied in a combinatorial clock auction or sealed bid combinatorial auction) requires bids made in the course of the auction to sufficiently reflect the relative value that bidders place on receiving different number of lots. Otherwise the value of awarded lots to losing bidders (i.e. the opportunity cost) might not be captured in the prices, and in particular it could create a situation where the final prices charged are below the true opportunity cost, contrary to the objective of using the rule in the first place. This would be a risk with the proposed clock auction format, since even with exit bids it may not always be possible for bidders to fully reflect their valuation structures in their bids.<sup>4</sup>

Incorporating an opportunity cost pricing rule would therefore only really make sense as part of general move to a more complex combinatorial auction format, such as a combinatorial clock auction (CCA) or sealed-bid combinatorial auction, where bidders are given greater flexibility over the range of bids that can be submitted. In particular, in these auction formats the use of a second price rule is intended to provide incentives for bidders to submit bids at valuation (directly in the sealed-bid combinatorial auction or in the supplementary bids round in the CCA), with bidders then paying only as much as they need to win the lots allocated to them. In the proposed clock auction, a similar function is achieved by the auction stopping once competition has run its course, with final bids not exceeding bidders' valuations (otherwise they would already have stopped bidding); winning bidders typically do not need to make bids up to their full valuation in the clock format unless they face particularly stiff competition from another bid with a closely similar valuation.

In its most recent submission to ComReg, ESNB has reiterated its views that opportunity cost pricing would be appropriate, arguing that:

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<sup>4</sup> See ComReg Document 18/92a.

- any additional complexity would be on the side of the auctioneer and not participants, and in any case would not be significant; and
- any money paid in excess of what was required for an efficient outcome (regardless of how big or small) is money which would have been invested in rolling out a network.

We first note that all of our previous arguments set out in ComReg Document 19/23b and above still apply, and we remain of the view that the proposed pay-your-bid pricing rule is appropriate for this proposed award.

In terms of additional complexity from using a more complex format, it is not correct that this lies only on the side of the auctioneer; bidders also need to have a good understanding of the pricing rules, and pay-your-bid is conceptually simpler than opportunity cost pricing. Implementing opportunity cost pricing would not be particularly onerous, but there are good arguments for keeping the auction rules as simple as possible for bidders (given the likely participation from bidders with little or no previous experience of spectrum auctions). Moreover, as discussed above, implementing opportunity cost pricing would only be appropriate if we were to use a more complex auction format. However, this would also undermine the objective of keeping the overall auction format simple and a move to one of these alternative formats would increase demands on bidders in understanding the auction mechanisms. In contrast, the proposed format has the advantage that bidders simply get another chance to bid again if they do not secure the lots they are bidding for.

We would only introduce complexity if it offered sufficient expected benefits for the award, and since prices under the proposed rules should be largely reflective of opportunity cost, we do not envisage any material gain or potential impact on the downstream market(s) from using a more complicated opportunity cost based approach.

For these reasons we do not recommend making any changes to the pricing rules previously proposed for this award.

### 3 Discount rate

A minimum price will apply to each lot available in the award, split into:

- a minimum spectrum access fee (SAF); and
- annual spectrum usage fees (SUFs)

These are set such that there is a 40:60 split of the minimum price between the minimum SAF and the sum of the (discounted) SUFs. For discounting the SUFs, we used a discount rate of 8.63%, based on ComReg's current estimate of the (nominal and pre-tax) mobile weighted average cost of capital (WACC).

In its response to ComReg Consultation Document 18/92 ESNB argued that it would be more appropriate for ComReg to instead use an alternative discount rate (4.95%) that is more in line with the WACC for investments in Network Infrastructure and therefore more suitable for a Smart Grid Operator.

DotEcon, in response to ESNB's suggestion<sup>5</sup>, acknowledged the commercial WACC might not be suitable for applying to a utility network, but highlighted that:

- the minimum prices are not designed to estimate the market value of the spectrum and have been set at a very low level, so any uncertainty over the value of the spectrum and the potential for making alternative assumptions (e.g. for different users) is already accounted for in the proposed minimum prices;
- there are a number of potential users/uses for the Part B spectrum with different WACCs, but we cannot account for this with user-specific SUFs as the annual fees need to be fixed and known to bidders prior to the auction in order to be fully considered as part of bidders' valuations for the spectrum;
- the alternative WACC proposed by ESNB would lead to lower SUFs, which would reduce incentives for an operator to return inefficiently unused spectrum to ComReg (in particular as the minimum prices have been set very conservatively in the first place);
- using the WACC for a commercial mobile operator could arguably be considered appropriate on the basis that the intention of the SAF and SUFs is to ensure efficient spectrum use, which typically requires charges to be based on the value to potential alternative users (such as the mobile operators) rather than the value to the user itself;
- bidders can account for their own individual WACCs in the bids that they submit during the award, and a small difference between an individual WACC and the WACC used for discounting SUFs should make no material difference to a bidder's ability to compete in the award; and
- putting more of the total fees into the SUFs (as with a higher discount rate) would support rather than hinder bidders with limited funds or uncertainty over valuations.

In its response to ComReg Document 19/23, ESNB accepts that the discount rate used needs to cover all potential users and that it is not possible to know the discount rate for all different users in advance. However, ESNB proposes that should a Network Utility Operator be successful in acquiring spectrum and there are no other successful bidders, a user-specific discount rate of 4.95% could be used for

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<sup>5</sup> See ComReg Document 19/23b

calculating the SUFs (which would lead to more funds being available for network deployment).

In response to this, we highlight that our arguments provided above and in Document 19/23b still apply. In particular, we reiterate that it is important for the SUFs to be fixed and known to bidders in advance, as these need to be accounted for when determining how to bid during the auction process (i.e. it is the sum of the SAF and the SUFs that determine the total a bidder would have to pay for spectrum, so the higher the SUFs the less a bidder would be willing put into the SAF via its bids in the auction). A process in which the SUFs to be paid by a bidder could differ depending on the outcome of the auction (as suggested by ESNB) could create bidding complexity for that bidder, as it would not know which level of SUFs would apply when needing to make their bid decisions. For this reason, we do not recommend an approach that varies the level of the SUFs depending on the auction outcome. We remain of the view that using a discount rate of 8.63% is appropriate and should not have any adverse effects on the award, in particular as the minimum prices are set conservatively and any small differences in bidder-specific WACCs can be accounted for in the bids submitted.