Zonal Pricing in Great Britain

Assessing the impact on the 7th CfD Allocation Round (AR7)

Report for sse

FEBRUARY 2025

REMA has provided some clarity for AR7 investors; if volume risk is left with investors it could push up AR7 strike prices and consumer costs

DESNZ's REMA Autumn Update provides new information for AR7 investors in a zonal market

- In October 2024, Frontier & LCP Delta published an analysis of the potential impact of implementing zonal pricing on the required support payments for an archetypal offshore wind farm in Scotland
- DESNZ's REMA **Autumn Update** has since provided additional detail on the arrangements for CfDs awarded in this year's Allocation Round 7 (AR7) should a decision be taken to implement a zonal market. In particular, DESNZ confirmed the **reference price would be a zonal reference price.**

This report draws the following conclusions about investment in AR7

- REMA has provided some clarity to AR7 investors on price risk protection should a decision be taken to introduce a zonal market but have not provided the same clarity about the treatment of volume risk.
- **Expectations of reduced volumes for AR7 investors will likely push up strike prices.**
- **This has two consequences that may lead to increased consumer costs:**
  - ***Infra-marginal rents*** - the total cost to customers is determined by the cost of marginal bid in each pot of the CfD auction. A higher strike price bid at the margin is paid to all other plants. If lower volumes increase strike prices this may in turn lead to higher infra-marginal rents to all non-marginal bids paid for by customers.

    *As an illustration - depending on the capacity of offshore wind in AR7, and assuming a Scottish plant is the marginal bid, this could lead to **additional customer costs of £2.5bn to £4.0bn.***
  - ***Strike price bids may turn out to be too conservative ex post*** – given increased range of potential outcomes for volumes in a zonal market compared to a national market, investors are likely to increase bids to guard against scenarios with lower volumes (i.e. those scenarios assuming less network build and more congestion). Customers are exposed to further increases in costs if in fact actual network build leads to higher volumes than were factored into bids.

    *As an illustration - assuming a 1GW plant in North Scotland bids a more conservative higher price due to volume uncertainty, higher actual volumes **could cost customers around an additional £350m** compared to a situation where their bid had been based on the higher volumes in the first place.*

REMA has provided some clarity for AR7 investors, but key uncertainties remain about their treatment in a zonal market

REMA Autumn update and recent REMA webinars have provided more clarity as to what investors bidding into AR7 can expect should DESNZ announce a decision to implement a zonal market prior to the AR7 auctions

Should a zonal decision be made:

- **Reference price would be zonal price.**
- AR7 investors treated in the same way as existing CfD agreements, in relation to any legacy/transitional arrangements.

Therefore, AR7 investors:

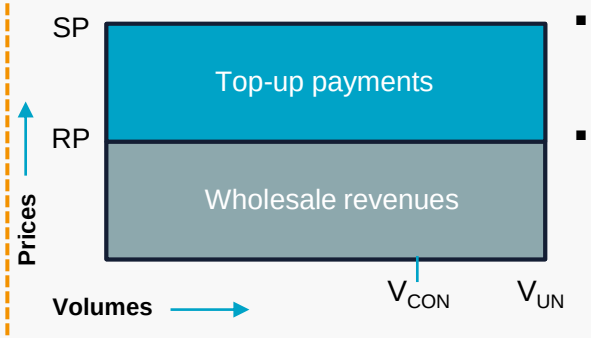
- would be **protected from locational price risk in a zonal market;** and
- absent further commitments from DESNZ, would be exposed to **greater locational volume risk in a zonal market**.

In addition, potential **questions would remain about reasonable expectations for the relevant details**:

- How many zones are expected? Where are the boundaries relative to individual connection points?
- What does intra-zonal TNUoS look like?
- What is the re-zoning process?
- When is the planned implementation date?

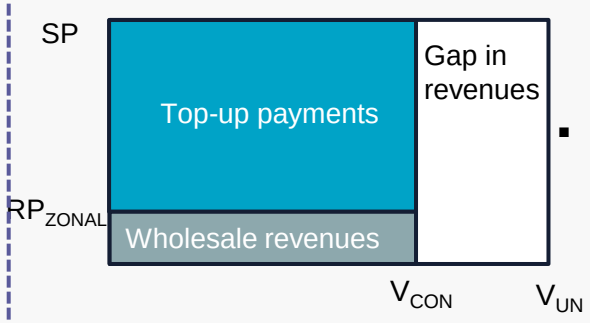
Even if the design details are clear, **uncertainties would remain around reasonable expectations for the pricing dynamics** in the market.

Current CfD design in national market



- Wind plant makes sales into reference market on unconstrained volumes (V_{UN}).
- Wind plant achieves reference price (RP) on wholesale sales and is compensated for constrained off volumes at value of lost top-up, so overall meets its strike price (SP).

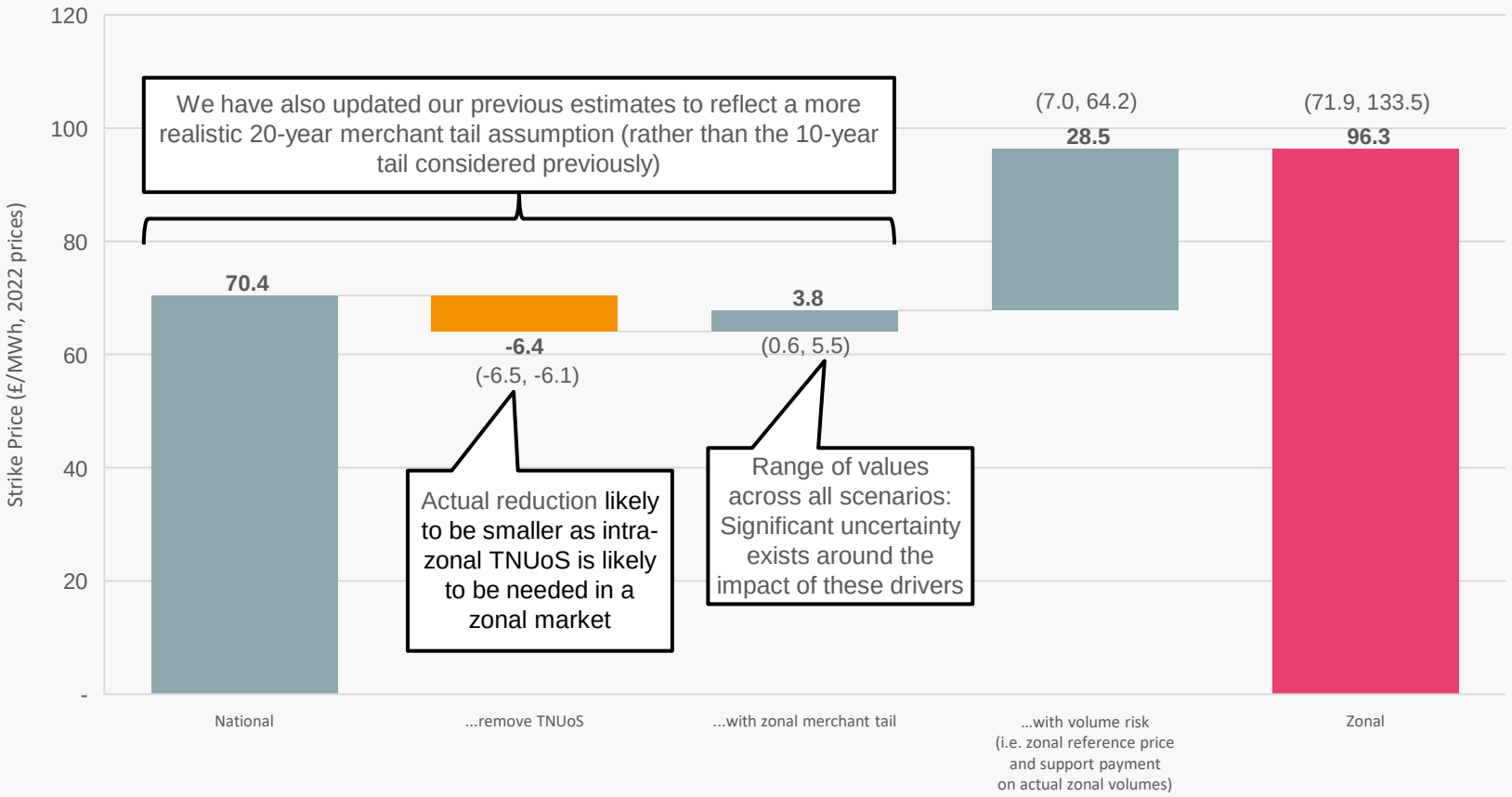
Absent further commitments, AR7 investors face significant volume risk in zonal market



- Wind plant earns lower wholesale price on actual volumes. This is reflected in the RP, so overall plant achieves SP on actual production.
- Gap in revenues introduced as top-ups only paid on actual volumes. Therefore, wind plant cannot earn any revenues on volumes which are curtailed due to congestion (incl. negative pricing).

If AR7 investors are left with zonal volume risk, CfD strike price bids are likely to increase…

We compare the offshore wind strike price for a plant in Northern Scotland in a national market and the strike price in a zonal market with a CfD with zonal reference price. The waterfall chart below decomposes the drivers of the increase.



Required strike price for a AR7 offshore wind plant located in Scotland is likely to increase if faced with volume risk in a zonal market.

In this example, average strike price increases from £70/MWh to £96/MWh*:

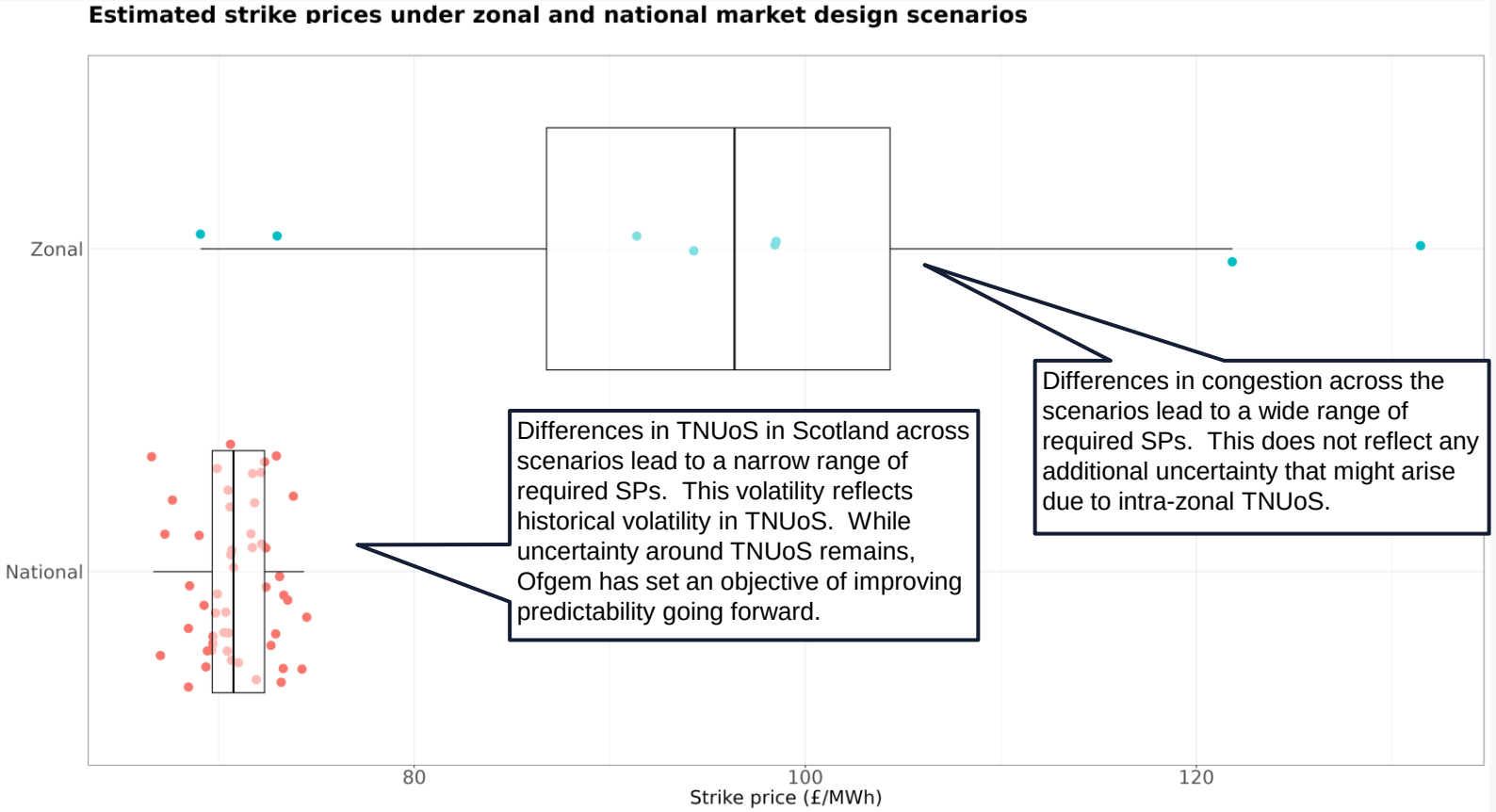
- Reduced revenues due to reduced (constrained) volumes in a zonal market pushes up the strike price by £29/MWh on average, but there is significant uncertainty over the potential impacts (ranging from £7-64/MWh).
- Other changes have a smaller effect:
  - locational TNUoS is removed (though it is possible an intra-zonal TNUoS remains).
  - reduced wholesale revenues in the merchant tail compared to the national market – this is independent of the CfD design.

Note: National strike price has been adjusted since our last analysis to be in line with prices in AR6. Size of volume risk and price risk effects changed relative to original report given the precise size of effects is affected by order in which the effects are considered.

* Zonal strike price exceeds the Administrative Strike Price (ASP) set for AR6, suggesting a decision to implement a zonal market without any volume protection should be accompanied by an increase in ASP

...and greater volume uncertainty will likely push up strike prices further

Across our modelling scenarios, we observe that the distribution of strike prices required to ensure the windfarm meets its target rate of return is much wider in a zonal market than in a national market. This is likely to result in higher strike price bids reflecting the additional uncertainty



Implication of volume risk for strike prices

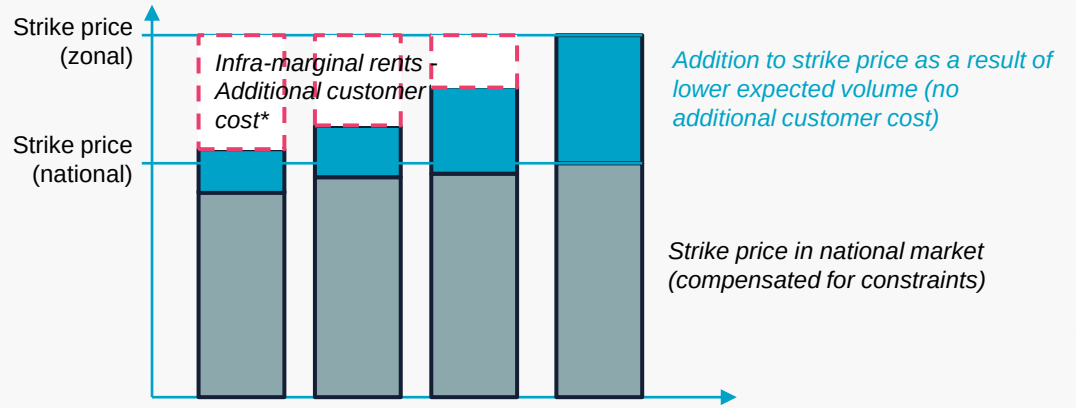
- To indicate the potential strike price impact implied by the difference in distribution we calculate bid which ensures plant meets its target rate of return with 90% probability and compare this to bid which ensures the plant meets its target rate of return with 50% probability.
- This shows greater variation in strike prices in zonal market:
  - National market, p90 bid of £73/MWh is ~**4%** higher than the median bid of £70/MWh.
  - Zonal market, p90 bid of £125/MWh is ~**29%** higher than the median bid of £96/MWh.

AR7 investors face additional uncertainty as a result of volume risk in zonal market. This risk may be altered if the government holds out the possibility of volume protection, though investors would still be exposed to risk around any final decision and detailed mechanism design

Spread of zonal scenarios reflects different network build assumptions, based around NOA7 and Beyond 2030 plans with variations which drive differences in the levels of congestion that investors might reasonably consider e.g. to reflect delays to planned delivery, or differences in the spread of offshore wind locations.

Leaving volume risk with generators is likely to lead to significant increases in the cost to consumers

Uncertain treatment of volume risk for AR7 investors will likely increase strike price bids and infra-marginal rents to all bidders…

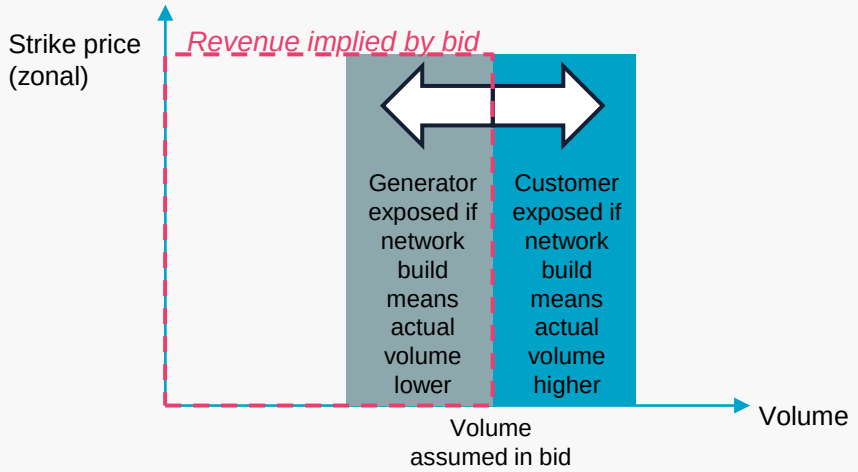


- AR7 investors likely to be spread across the country. The total cost to customers is determined by the cost of marginal bid in each pot of the CfD auction. A higher strike price bid at the margin is paid to all plants. If lower volumes increase strike prices this may lead to higher infra-marginal rents to all non-marginal bids, paid for by customers.
- ***As an illustration*** *- depending on capacity of offshore wind in AR7 and assuming a plant in North Scotland is the marginal bidder then a decision to implement zonal could lead to* ***additional customer costs of between £2.5bn and £4.0bn****.**

Illustrative impact of higher zonal strike prices	**AR7 capacity (GW)**	**Marginal bid from zonal distribution**	**Increase in bid due to zonal**	**Increase in customer costs (NPV)**
Low	6	P50	£26/MWh	£2.5bn
High	8	P75**	£32/MWh	£4.0bn

*Additional customer cost should be net of the IMR which customers would have paid in the national CfD auction. It is likely to be significantly lower than in zonal market, given regional differences in national market primarily driven by TNUoS which has a smaller effect on strike prices than zonal volume risk. Absent a value, we scale the estimated IMR by the ratio of TNUoS risk to volume risk for North Scotland archetype plant.

…and strike price bids may turn out to be too conservative ex post leading to additional customer costs



- Given increased range of potential outcomes for volumes in a zonal market compared to a national market, investors are likely to increase bids to guard against scenarios with lower volumes (i.e. those scenarios assuming less network build and more congestion).
- Customers are exposed to further increases in costs if in fact actual network build (or lower new generation build) leads to higher volumes than were factored into bids i.e. customers would pay the higher strike price across all additional volumes.
- ***As an illustration*** *- assuming a 1GW plant in North Scotland bid its P75 strike price of £104/MWh, an increase in its output consistent with its P50 bid of £96/MWh could lead to* ***additional customer costs of around £350m****

**P75 bid ensures plant meets its target rate of return with 75% probability

**We assume plant bids at P75 strike price but achieves volumes equivalent to the P50 strike price, which is an increase in volume of 12% relative to its expectation.

LCP Delta

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