



# Reforming Electricity Markets for an Evolving Energy Landscape

*Michael G. Pollitt*

*Cambridge Judge Business School  
and  
Centre on Regulation in Europe*

*CEEPR-CBS-DTU-EPRG  
Conference  
27 September 2024*

# What happened in the energy crisis 1: Carbon prices were at historic highs! Finally!!

EU Carbon Permits



Price per tonne  
CO2

Euro HICP:  
+54% since 2005

+40 Euros / tonne  
Since 2019

= +16 Euro / MWh from  
CCGT

Source: Trading Economics

# What happened in the energy crisis 2: wholesale electricity prices higher now due to carbon price

France Electricity Spot Prices



source: tradingeconomics.com

Euro per MWh

2019 =  
c.54 peak

2024 =  
c.82  
i.e. 66 (excluding  
carbon price effect)

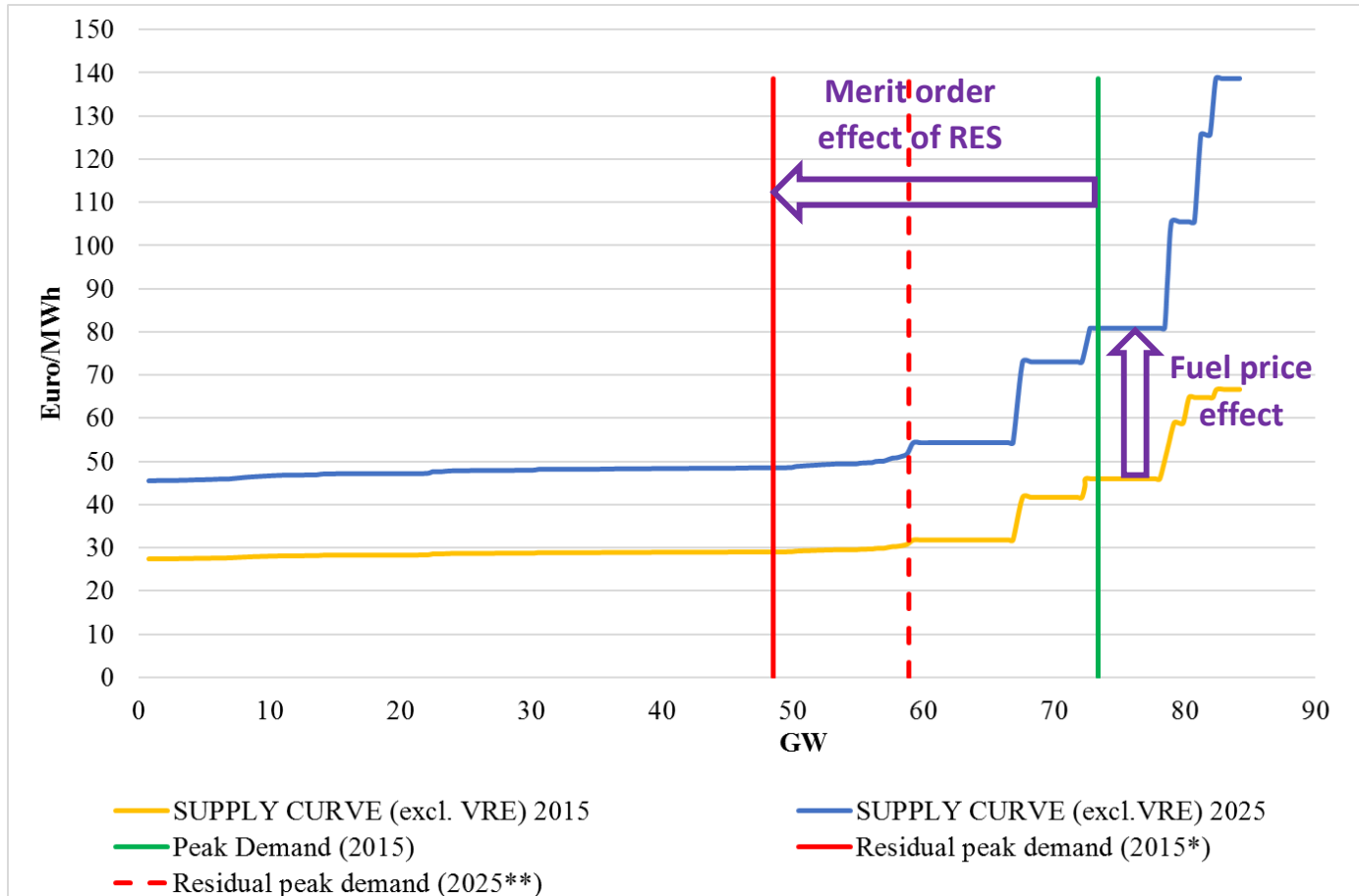
Euro HICP:  
+ 24% since 2019

Power price  
elevated by carbon  
price.

Back to 2019 levels  
adjusting for price<sub>3</sub>  
of carbon.

# Three things we know about decarbonizing power

## 1: Carbon and fuel prices can work together

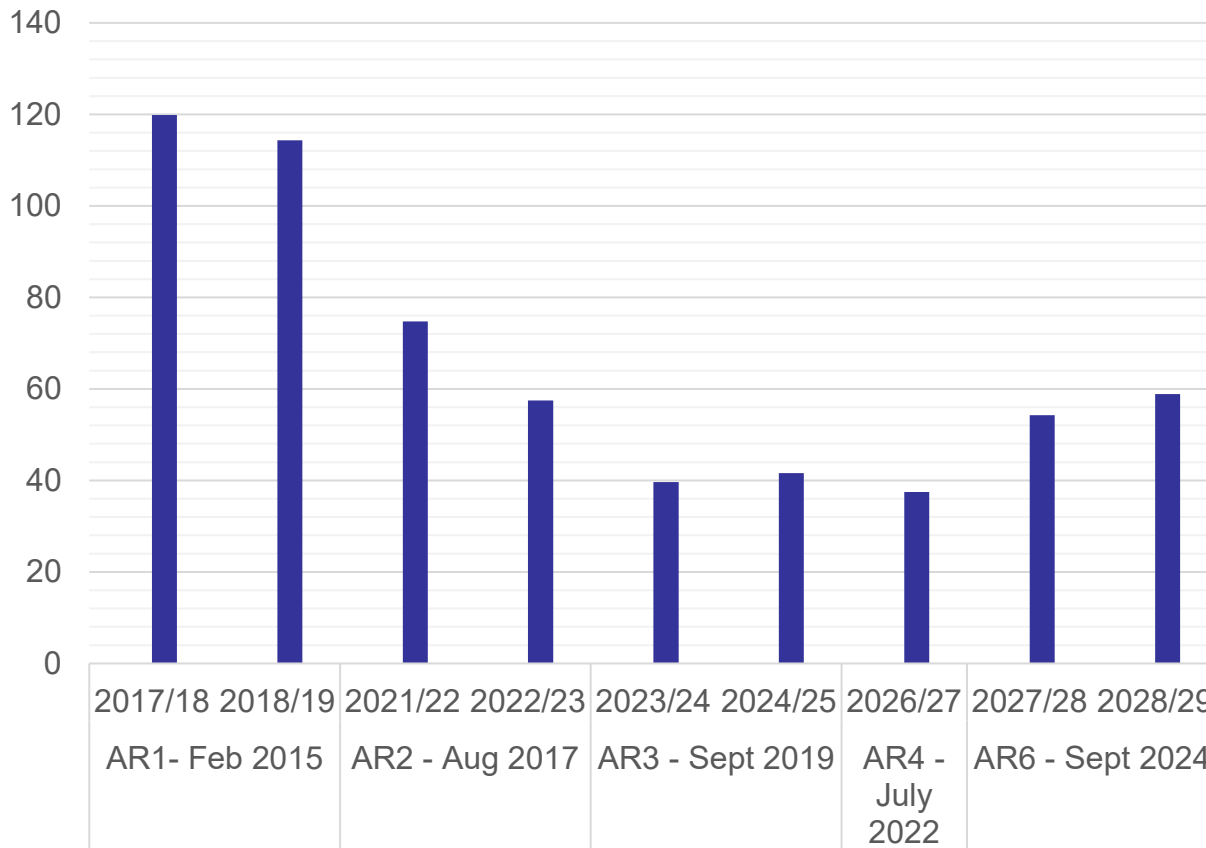


1. An empirical question requiring some modelling
2. Depends on fossil fuel/carbon prices, VRE capacity in a generation mix

# Three things we know about decarbonizing power

## 2: Auctions for low carbon work

Offshore Wind Strike Prices by Delivery Date  
2012 Prices per MWh



Capacity Installed:

2016: 5.3 GWs

2023: 14.7 GWs

Source: UK Govt Auction Results

# Three things we know about decarbonizing power

## 3: Competitive ancillary markets work

### GB monthly ancillary service costs

Cost £m	Mar-24
Energy Imbalance	7.70
Operating Reserve	11.14
STOR	3.34
Constraints	120.83
Negative Reserve	0.32
Fast Reserve	15.04
Response	14.58
Other Reserve	2.07
Reactive	13.60
Black Start	3.18
Minor Components	4.86
Total	196.67

c.5-10% of wholesale energy market

Costs rising (though not volumes procured)...

36 TWh net in 2019-20  
25 TWh net in 2023-24

£1.3bn in 2019-20  
£4.1bn in 2022-23  
£2.5bn in 2023-24

Source: NG ESO, Monthly Balancing Services Summary (MBSS) March-2024

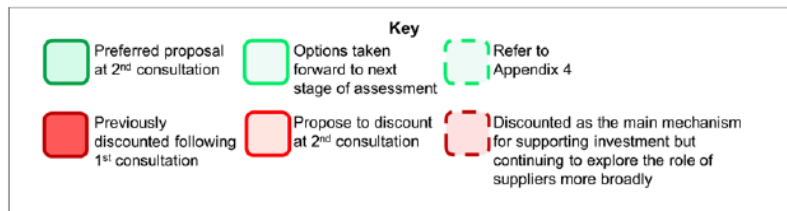
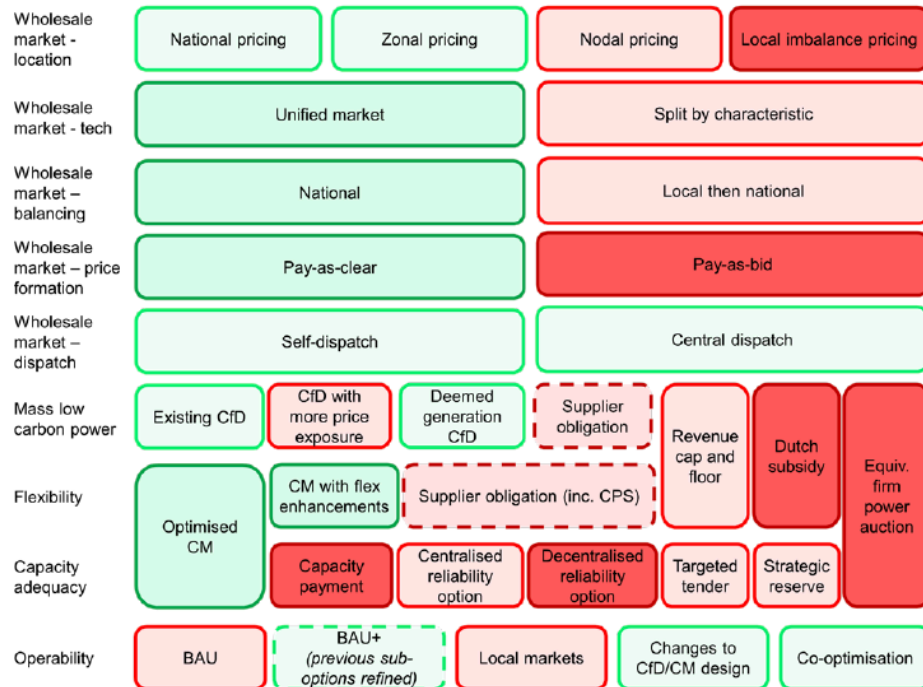
---

**What does the future hold for market design?**

# Reform is a continuous process even in UK 35 years and counting...

## UK electricity market, Review of Electricity Market Arrangements REMA.

Figure 2: How the options from the first REMA consultation have progressed



- Initiated in the energy crisis (July 2022). Published second consultation in March 2024.
- First consultation suggests a large number of possible reforms (in green and red on left).
- Second consultation takes forward reforms in green for further consideration...

Source: DESNZ (2024, p.15),

<https://assets.publishing.service.gov.uk/media/65ef6694133c220011cd37cd/review-electricity-market-arrangements-second-consultation-document.pdf>



## Some observations

- The crisis showed that wholesale markets work and can deliver low carbon, with higher carbon prices. The missing money problem of 2019 is not the current problem...
- The extension of marginal pricing of electricity to LMPs had a setback, though more zonal pricing may prove popular, for green industrial policy reasons.
- The limits of retail market price flexibility were revealed and intervention on the retail side remains widespread with the prospects for further intervention in future supply crunches.
- A more active demand side can be activated by high prices, but more automated control remains the only viable way forward for most customers to participate in the demand side.
- Incremental reforms (e.g. to ancillary markets) more likely to make headway than a fundamental rethinking.

# References

- Pollitt, M. (2019), 'The Single Market in Electricity: An Economic Assessment', *Review of Industrial Organization*, 55(1): 89-109.
- Pollitt, M.G., von der Fehr, N-H., Willems, B., Banet, C., Le Coq, C. and Chyong, C.K. (2024), 'Recommendations for a Future-Proof Electricity Market Design in Europe in the light of the 2021-23 energy crisis', *Energy Policy*, 188 (May): 114051.
- Pollitt, M.G., von der Fehr, N-H, Willems, B,, Banet, C., Le Coq, C., Navia, D., and Bennato, A.R. (2022), *Recommendations for a Future Proof Electricity Market Design*, Centre on Regulation in Europe. [https://cerre.eu/wp-content/uploads/2022/12/CERRE\\_MarketDesign\\_Final.pdf](https://cerre.eu/wp-content/uploads/2022/12/CERRE_MarketDesign_Final.pdf)
- Pollitt, M.G. (2022), *The Energy Market in Time of War*, September 7, 2022, Centre on Regulation in Europe. [https://cerre.eu/wp-content/uploads/2022/09/The-War-Economy-and-Energy-CERRE\\_edited-TC\\_2AM-PDF.pdf](https://cerre.eu/wp-content/uploads/2022/09/The-War-Economy-and-Energy-CERRE_edited-TC_2AM-PDF.pdf)
- Pollitt, M.G. (2024), 'Energy Markets Under Stress: Some Reflections on Lessons From the 2021-2023 Energy Price Crisis in Europe', *Economics of Energy and Environmental Policy*, 13(2): 83-102.