



# Some thoughts on electricity market design for high renewables

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*11<sup>th</sup> June 2021*

# 3 Questions about Electricity Market Design

Pollitt and Chyong (2018)

1. *How well is the current market design working, as the roll out of RES generation continues?*
2. *What limited adaptations to the current market design might be possible in the timeframe to 2025?*
3. *In the context of 1 and 2, will there be a tipping point in the current energy market, when the penetration of RES might be so high as to cause the need for a more radical market redesign to address the investment signal issue?*



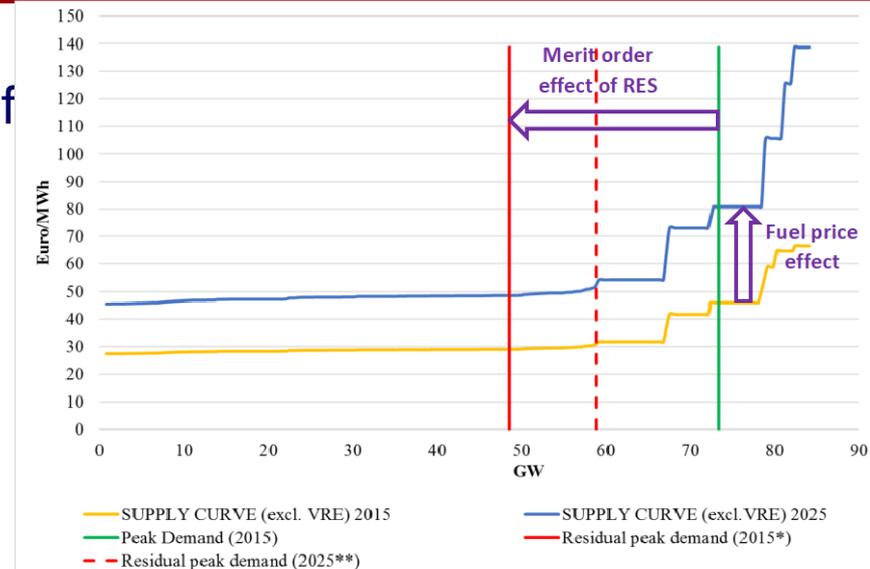
# Assessment of current market design

## 1. Is the current market working?

— Maybe yes, low prices reflect lack of demand for new capacity.

## 2. Will the current market naturally adjust to end of subsidies?

— Prices may rise, costs may fall  
— Depends on price of gas and on characteristics of RES



## 1. Can market be easily evolved to cope?

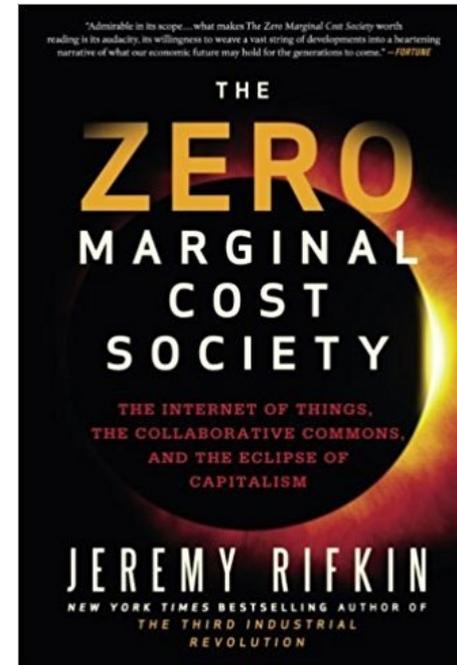
— Better ancillary services markets (see Pollitt and Anaya, 2020)  
— Finer energy price resolution (5 or 1 minute)  
— Different light touch, 0 expected cost, CfDs  
— Capacity markets (one across Europe?)  
— The 4<sup>th</sup> (Winter) package, the answer?  
The answer maybe no.

# Carbon+energy markets may or may not work

1. It is far from clear that wind and solar generation technologies can rely on wholesale power markets and prices in the medium term (by 2025) to self-finance their investments.
2. However substantial decline in costs so far and rising carbon prices definitely helps move us towards genuine “subsidy-free” investments in VRE.
3. Even if we take a rather bullish view that by 2025 commodity markets are going to be very tight not enough on its own.
4. Wholesale power prices may no longer serve as a long-run investment signal for conventional generating capacity as well (CCGT, for example).
5. With further large penetration of VRE, still may be negative impact on profitability of marginal CCGTs, exacerbating their current missing money problem further.

# A radical re-design of the electricity market?

- Empirical question: at what level of renewables do we observe discontinuities in volatility of hourly and annual prices?
- These could be only at very high levels of intermittent RES which may not be likely before 2030.
- At this point widespread long-term contracting might be necessary and short term reserve prices cannot drive long run investment. At this point radical redesigns might be imagined:
  - Indeed internet-type quantity rationing of load in priority order under shortage conditions might be preferable to price based rationing. (Pollitt (2021)).
  - A return to vertically integrated utilities or contractual versions of them, with negotiated short term arrangements.



# Future of the Distribution System Operator

Pollitt, Giuletti, Anaya (2021)

## We set out to investigate **three questions**:

- How can and should the system operation (**SO**) **function of the DSO** be defined and regulated?
- What can regulators and EU policymakers learn from TSO regulation that can be translated down to the DSO?
- How can national regulators and EU institutions **support the capacity of the DSO** to operate and coordinate the system?

## Methodology:

- **2 parallel surveys** to national regulatory agencies (NRAs) and DSOs
- **A set of case studies** (from the survey) of DSOs covering different roles
- Development of **5 scenarios** where the role of the DSO might be thought to be important



# Conclusions from the DSO Study

- It **will take time for the Electricity Regulation EU (2019/943) and Directive (2019/944) to have a significant impact on European DSOs** (especially as it was drafted in 2016 and pre-dates Net Zero).
- Our survey suggests **there is work for NRAs and DSOs to do in clarifying the best way forward for the DSO.**
- There is **little evidence that the active DSO has progressed very far in measurable terms, apart from in the UK.**
- There should be a **major role for the EU DSO Entity in evaluating, collating and spreading useful information and experiences** from projects related to the ‘future of the DSO’.
- Areas of **future developments (from scenarios) need to be addressed.**

# Further reading

- Pollitt, M., Giuletti, M. and Anaya, A. (2021), *Optimal Regulation for European DSOs to 2025 and Beyond*, Brussels, Centre on Regulation in Europe.
- Pollitt, M. and Anaya, K. (2021), 'Competition in Markets for Ancillary Services? The implications of rising distributed generation', *The Energy Journal*, 42: 5-31 (Special issue) [10.5547/01956574.42.SI1.mpol](https://doi.org/10.5547/01956574.42.SI1.mpol)
- Pollitt, M. (2021), 'The Future Design of the Electricity Market', In Glachant, J-M., Joskow, P.L. and Pollitt, M.G. (eds.), *Handbook on the Economics of Electricity*, Forthcoming.
- Pollitt, M. and Chyong, C.K. (2018), *Europe's Electricity Market Design: 2030 and Beyond*, Brussels: Centre on Regulation in Europe.