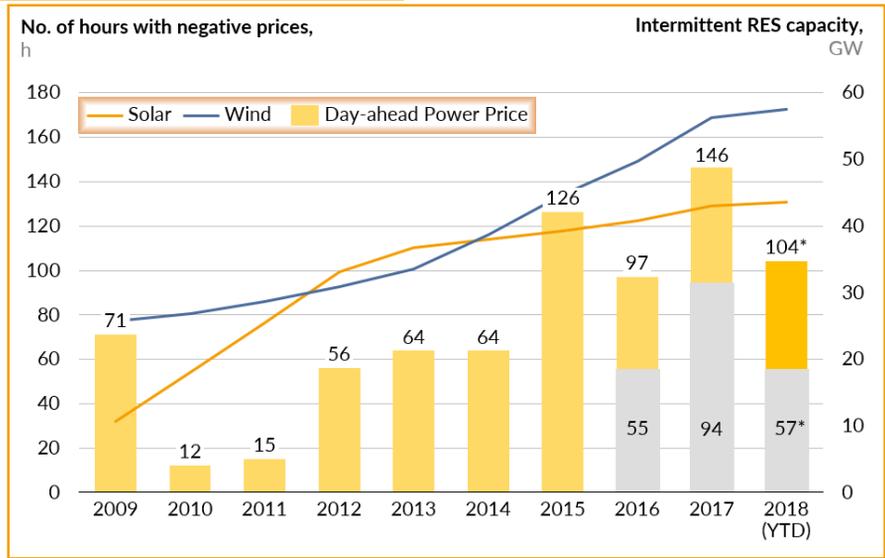


Negative power prices impact revenues of German renewables

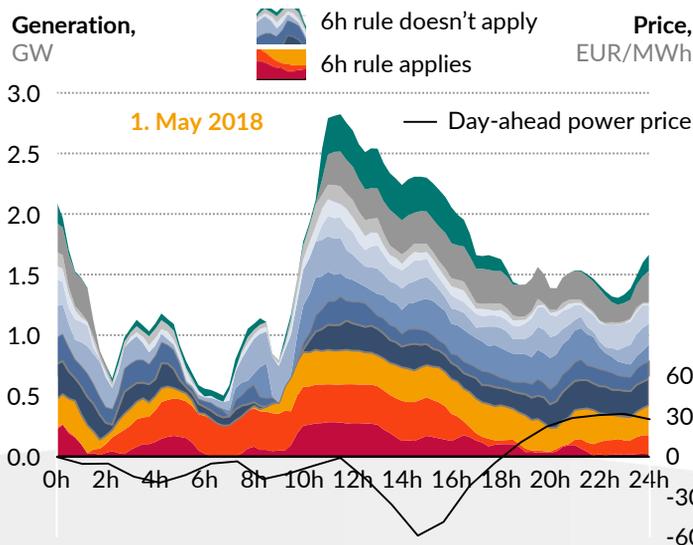
- Increased renewables generation decreases residual load – less thermal generation is needed
- Thermal capacities did flexibilise in past years but still add up to a must-runbase of between 15 and 20 GW – oversupply in hours with high renewables generation leads to increased occurrence of negative prices
- The EEG 2017 §51 “6-hour rule” was designed to incentivise curtailment of subsidised renewables built after 1.1.2016: subsidy payments cease if day-ahead prices are negative for at least 6 consecutive hours
- In the face of inaccurate day-ahead weather forecasts and high subsidy levels, curtailing and losing subsidies is riskier for operators than having to accept negative prices in case the 6-hour-rule applies
- Losses through forgone subsidies of an average offshore park lie between 5 and 8 million EUR/year and are significantly impacting current valuations

Historical development of negative-price-hours and the 6h rule

- Since the introduction of negative day-ahead prices in 2008, their occurrence has strongly increased
- In parallel, the number of consecutive 6-hour-blocks with prices lower than zero has increased
- Occurrences of (prolonged) negative price hours correlate with intermittent renewables capacities, which reduce residual load



Exemplary day with prolonged negative prices (18h): no evident curtailment



Day-ahead production is not curtailed to avoid potential 6h period – instead, trading position is optimised in intraday market

- 1 No trading as intraday price is > 0
- 2 Plant curtails and clears day-ahead position on intraday with lower losses
- 3 Plant curtails and clears day-ahead position on intraday with profit

