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Renewables & Battery Summit

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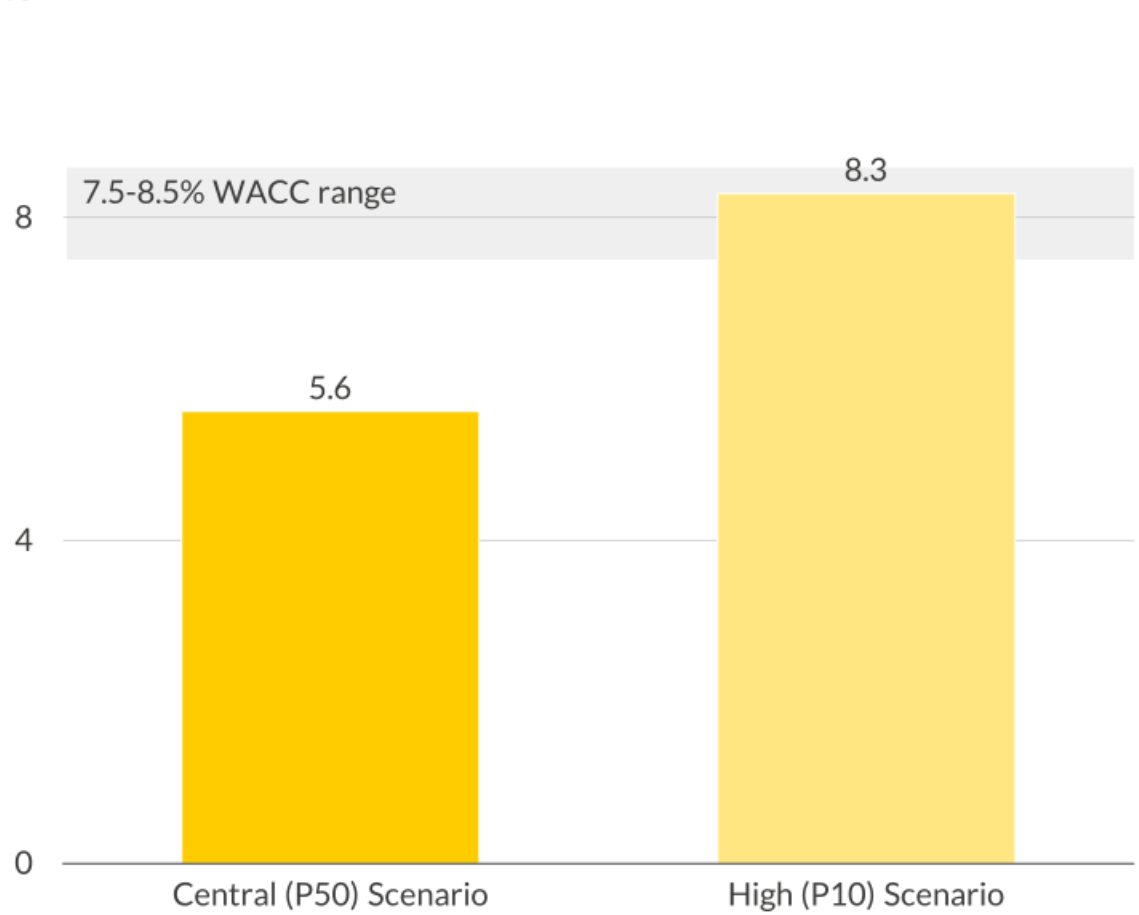
AURORA KEYNOTE

ASSESSING THE FUTURE OF MARKET-BASED RENEWABLE BUILD-OUT POST-CRISIS & ITS IMPLICATIONS

Merchant Solar PV projects are not profitable in the short term, since IRRs are generally below hurdle rates in a P50 scenario

IRR for a Solar PV merchant business case with COD 2027 (unlevered, pre-tax)[1]



- In the Central scenario, the **project IRR for a merchant Solar PV asset with COD 2027 is well below the WACC.**
- **Project IRRs reach the required WACC level only in the High scenario**, but this scenario is **rather unlikely** (P10).

The Solar PV merchant business case is not viable in the short term according to Aurora's best view of the capture price development.

1) Assumptions: 30-year project lifetime, 12.4% load factor, 586 €/kW CAPEX (real 2023), 14 – 18 €/kW OPEX (real 2023).

Sources: Aurora Energy Research

Given current market trends, IRRs for PPA-backed Solar PV projects do not surpass their hurdle rates, not even for corporate PPAs

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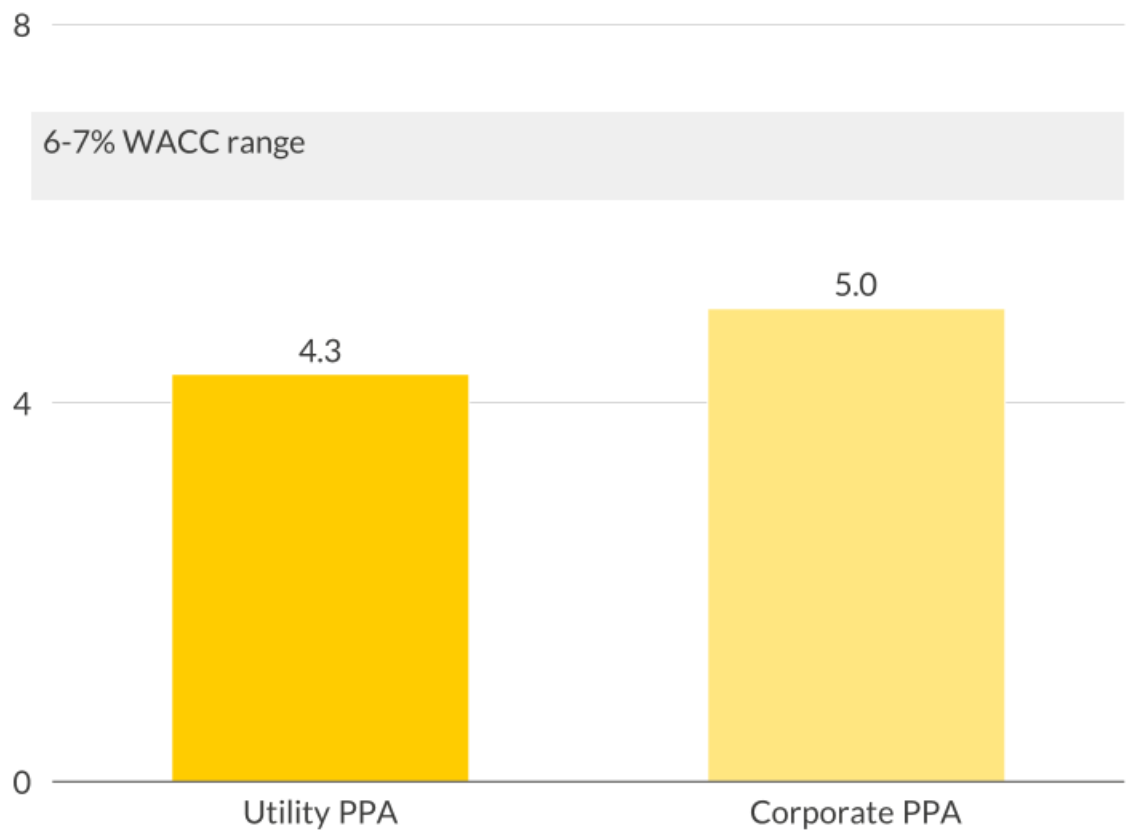
IRR for a Solar PV PPA business case with COD 2027 (unlevered, pre-tax)[1]



- With low expectations of captures prices, **utility PPA** IRRs are well below their WACCs
- Even when accounting for the higher willingness to pay in a **corporate PPA** case, IRRs fall short of the WACCs

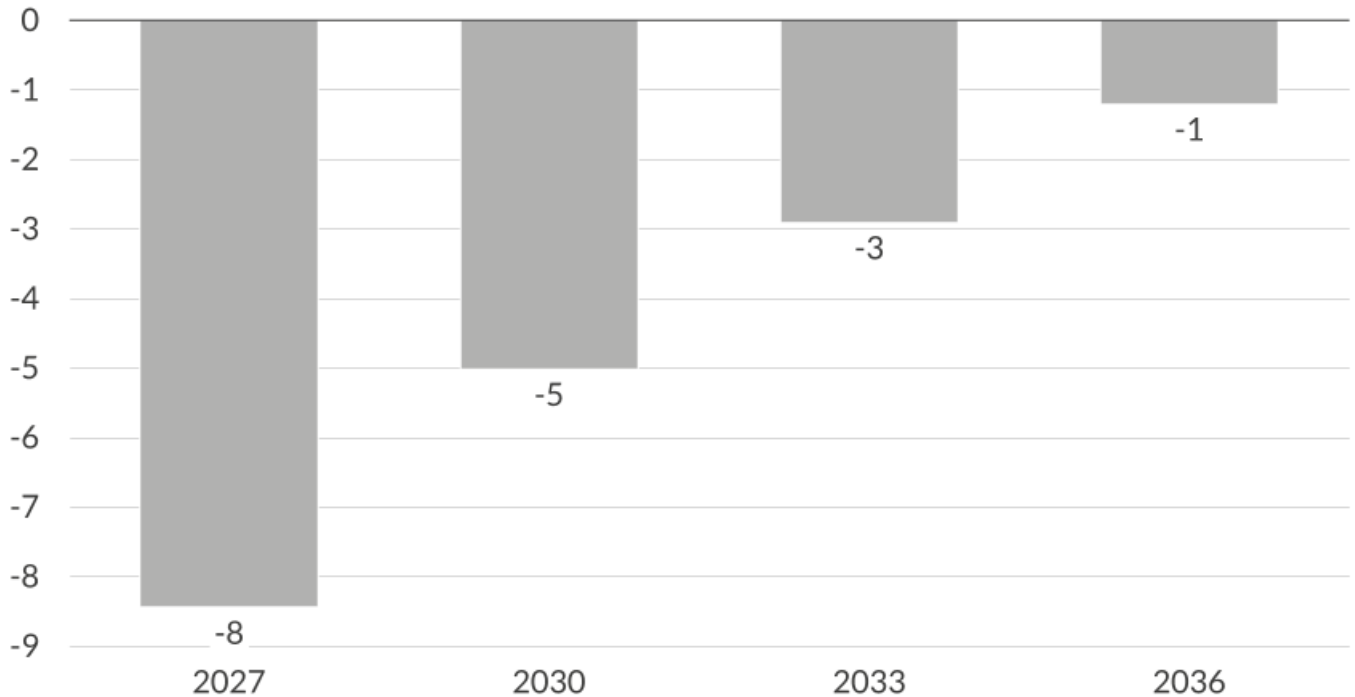
Given Aurora's current forecast for PPAs closed in 3 years time, a PPA-backed Solar PV project is not profitable

1) Assumptions: 30-year project lifetime, 12.4% load factor, 586 €/kW CAPEX (real 2023), 14 – 18 €/kW OPEX (real 2023); 10-year as-produced PPA for the first 10 years after COD, merchant operation assumed for the remaining asset lifetime. PPA price forecasts have been converted from nominal to real.

Sources: Aurora Energy Research

A fully merchant business model for stand-alone Solar PV only becomes viable in the late 2030s

Delta between capture price and LCOE by COD for a merchant business model, Aurora Central[1]
€/MWh (real 2023)



Delta to LCOE as a percentage of the average capture price

16% 10% 6% 2%

- A merchant project with COD in 2027 has a **revenue shortfall of 8€/MWh (16% its average capture rate)** to reach profitability.
- The **business case improves over time**, mainly driven by cost degression; by 2036, average capture rates almost reach parity with LCOE.

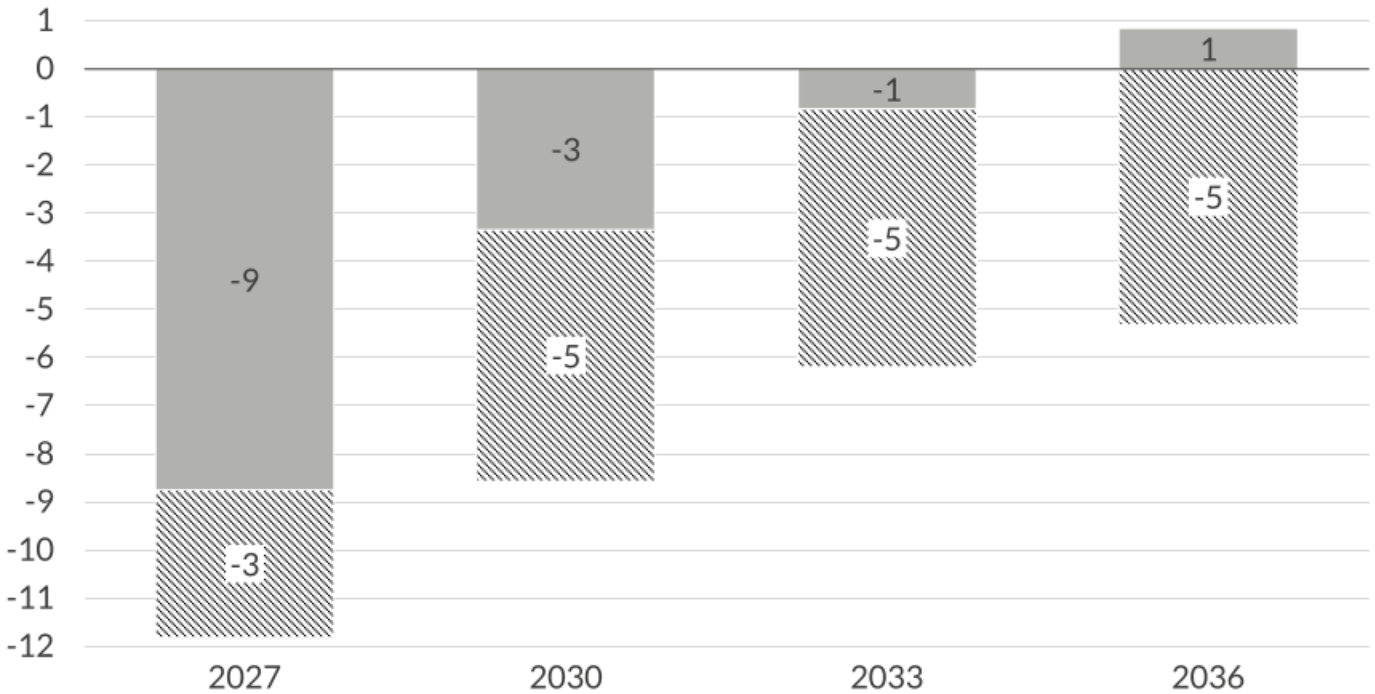
While a fully merchant business case is not viable in the short-term for average projects, we expect merchant projects to become profitable in the late 2030s

1) Asset lifetime of 30 years, capture prices are weighted with a yearly discount factor of 8%. PPA price forecasts have been converted from nominal to real.

Source: Aurora Energy Research

Even PPA-backed business models that are at the upper end of the expected PPA price range will not be profitable until the mid-2030s

Delta between capture price and LCOE for a PPA business model[1], Aurora Central
€/MWh (real 2023)



Delta to LCOE as a percentage of the average capture price (optimistic case)

High PPA price outlook (corporate PPA) | Low PPA price outlook (Utility PPA)

- A PPA-backed project with COD in 2027 has a **revenue shortfall of 9€/MWh (18% its average capture rate)** to reach profitability.
- The **business case improves over time**, driven mainly by cost degression; by 2036, the average capture rate surpasses LCOE when taking an optimistic PPA price assumption.

Profitability can be achieved earlier than in the merchant case, but PPA prices will not be sufficient to reach the LCOE level until the mid-2030s

Continued state support is required to reach buildout targets

1) Asset lifetime of 30 years, As-produced PPA with a tenor of 10-years, closed for the first 10 years after COD; Capture prices are weighted with a yearly discount factor of 6.5%. PPA price forecasts have been converted from nominal to real.

Source: Aurora Energy Research

Following the EU power market design reform, CfDs will likely become the primary subsidy mechanism for new RES assets

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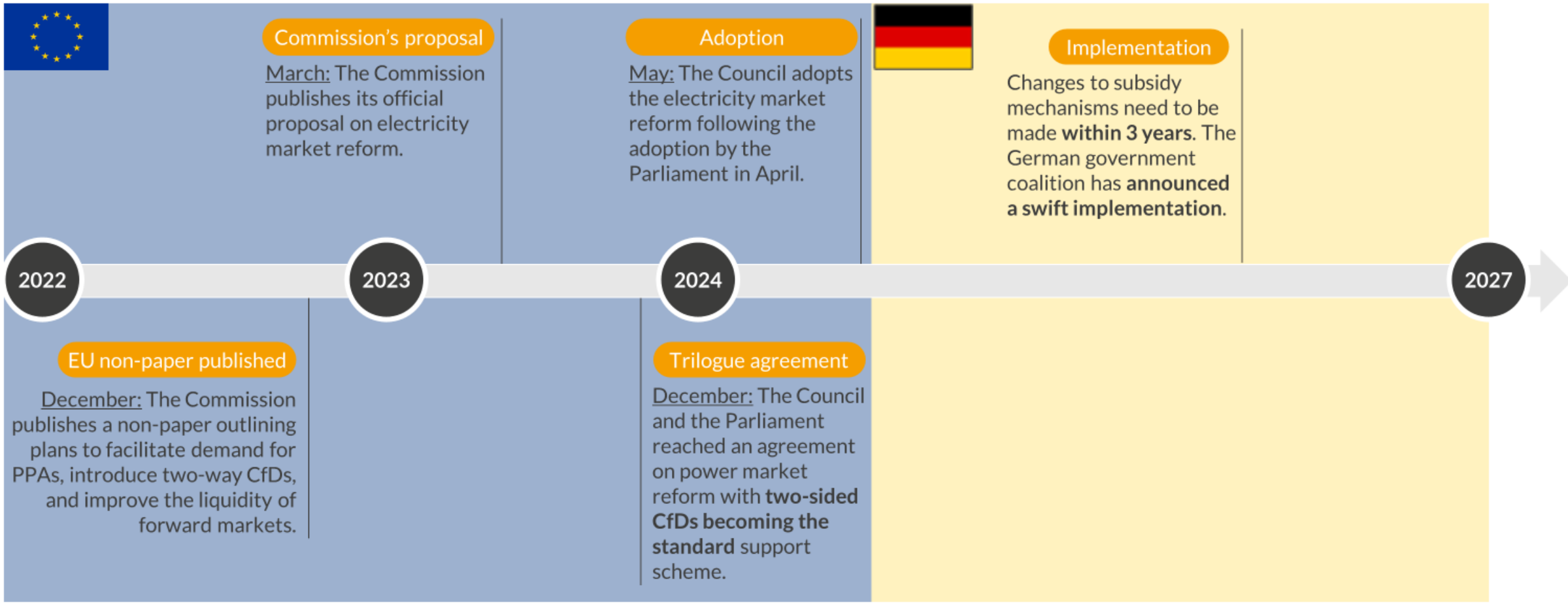
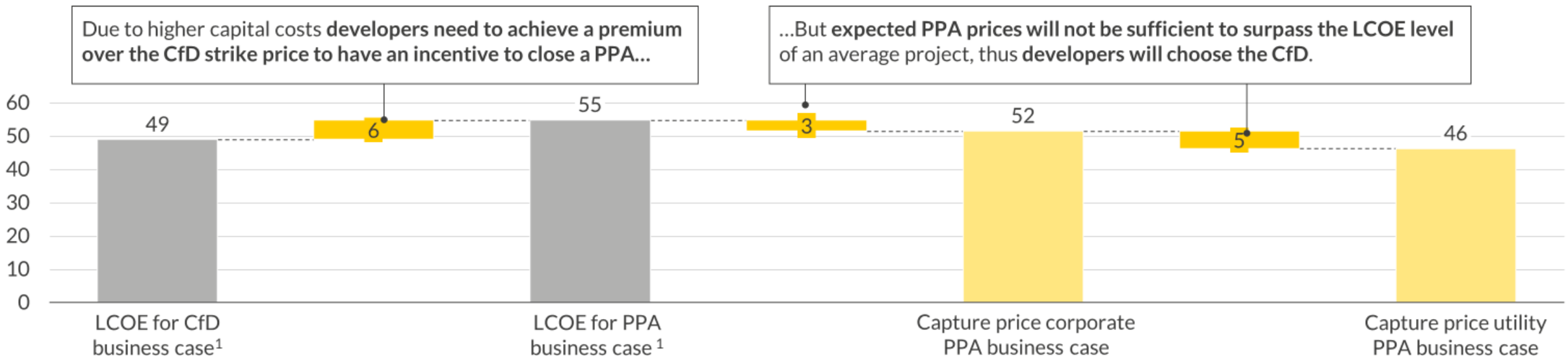
EU electricity market design reform timeline



Sources: Aurora Energy Research

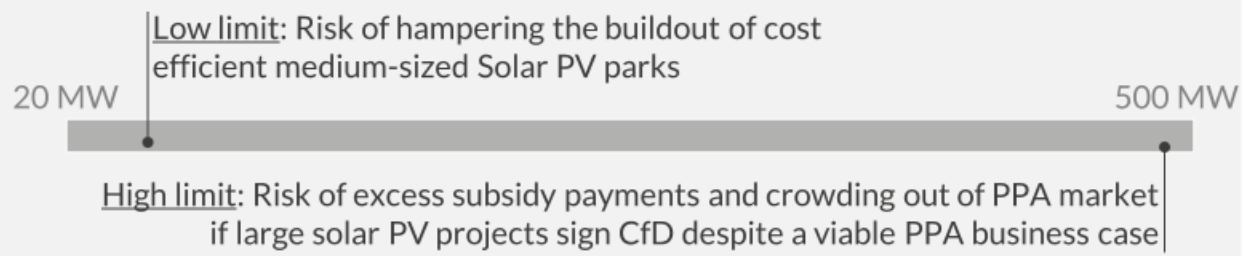
CfDs will be the preferred option for most Solar PV projects given the current market outlook, hence PPA supply will be limited

Comparison of CfD and PPA options for a project with COD in 2030
€/MWh (real 2023)



- In a market environment in which expected PPA and wholesale prices are not sufficient to cover the LCOE, **CfDs will be the preferred business model for most Solar developers, limiting PPA supply.**
- There will still be some PPA being closed because **large projects have lower LCOE and some offtakers have a higher willingness to pay.** The **project size threshold for CfD auctions will be a key lever.**

Considerations for the CfD project size limit
Illustrative



1) See slide 4 and 5 for assumptions.

Source: Aurora Energy Research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