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ENERGY RESEARCH

Impact of Two-Sided CfDs on Renewables Business Cases and Buildout

Strommarkttreffen

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A clawback mechanism is likely to be implemented with the EEG 2027 while still incentivising asset-specific performance

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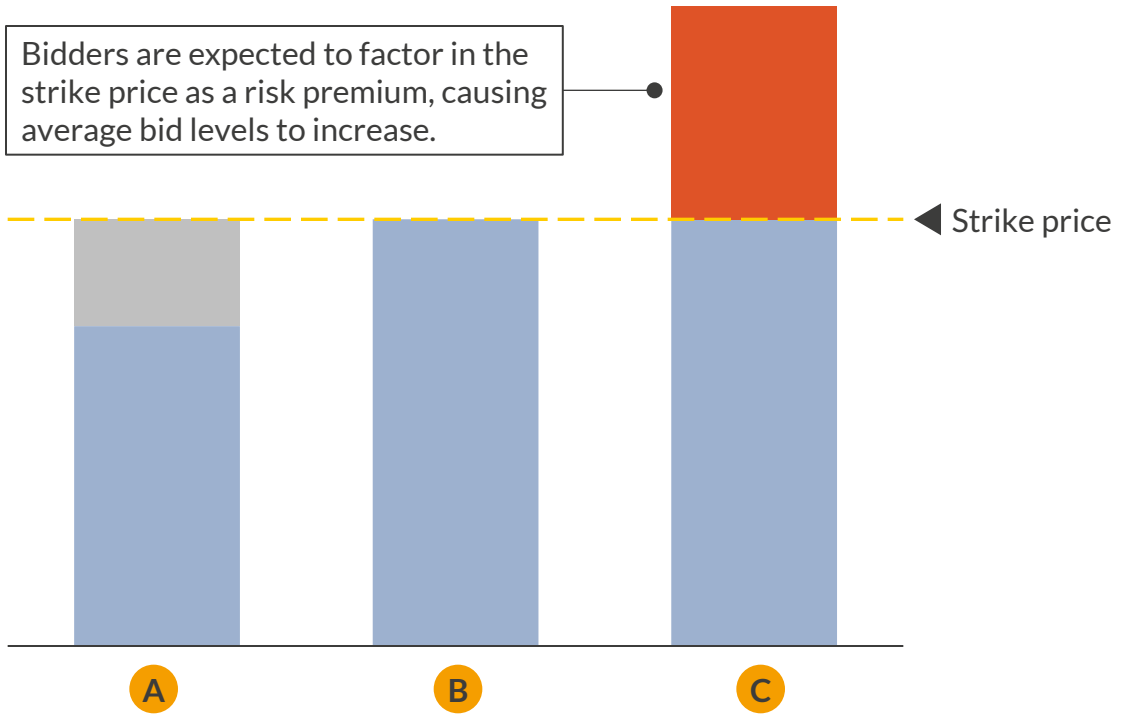
EEG 2027 (draft)

1 The leak of the new EEG subsidy scheme differentiates between three cases.



A dynamic clawback mechanism reduces the refinancing contribution during low but positive market-price periods to maintain generation incentives while preserving wholesale price signals (→ deep-dive).

2 The amount and direction of the payment depends on the uncurtailed capture price[1].

A Low fleet-average capture price

- The fleet-average capture price is **lower than the support level**. Therefore, a market premium is paid to RES generators.

Revenue = Asset-specific market value + Market premium

Support level[2] – Uncurtailed capture price

B

- Medium fleet-average capture price
- The fleet-average capture price is **as high as the strike price**. Therefore, there is no payment issued either to or from the RES generator.

Revenue = Asset-specific market value

C

- High fleet-average capture price
- The fleet-average capture price is **higher than the strike price**. Therefore, RES generators must pay a clawback to the grid operator.

Revenue = Asset-specific market value - Clawback

Uncurtailed capture price | Market premium | Clawback

1) Uncurtailed generation-weighted capture price; 2) Equivalent to the German "*anzulegender Wert*" from the Renewable Energy Act.

Source: Aurora Energy Research

The dynamic clawback could reduce or even exempt refinancing contribution during low but positive price periods

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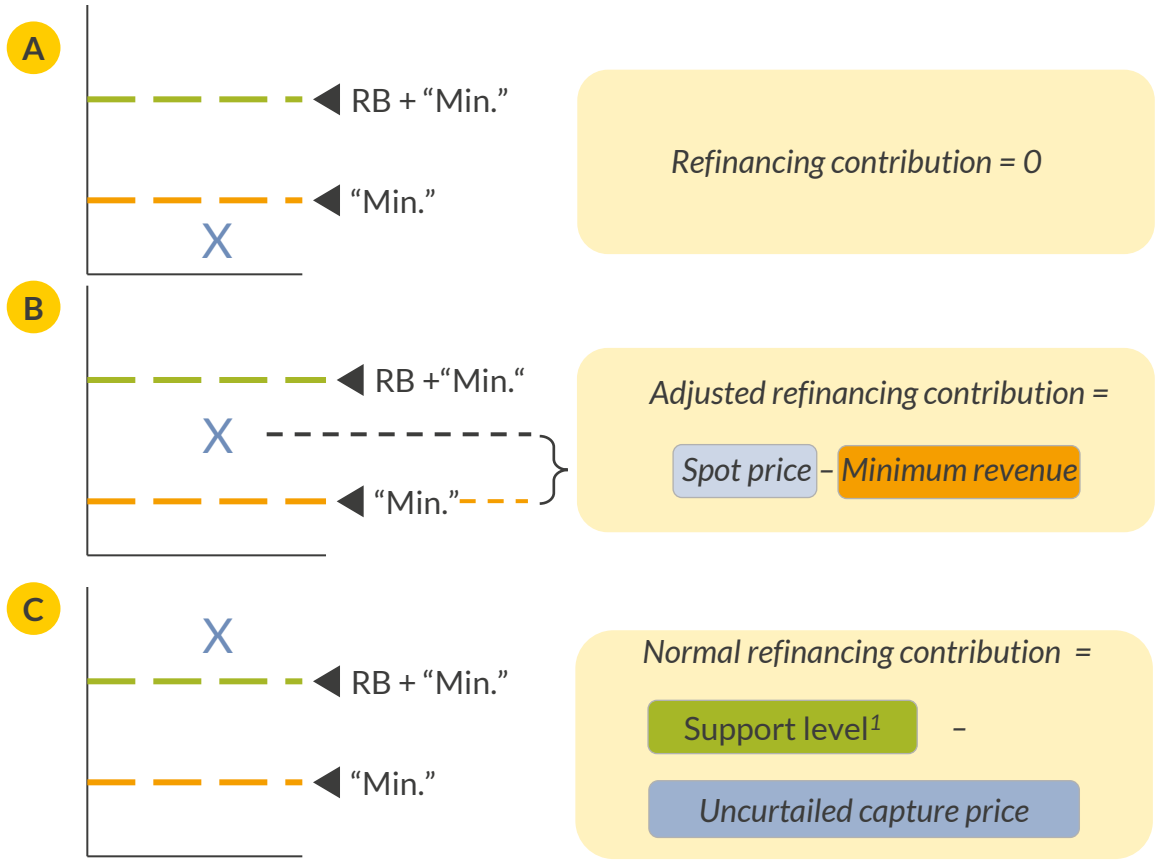
EEG 2027 (draft)

1 The dynamic clawback prevents curtailment incentives at low-but-positive prices by ensuring a technology-specific minimum revenue in years .

2 Technology-specific minimum revenues lie between 5-15 €/MWh, exposing 66–81 % of solar and wind generation to potential clawback.

Refinancing contribution vs. 15-min spot price, illustrative



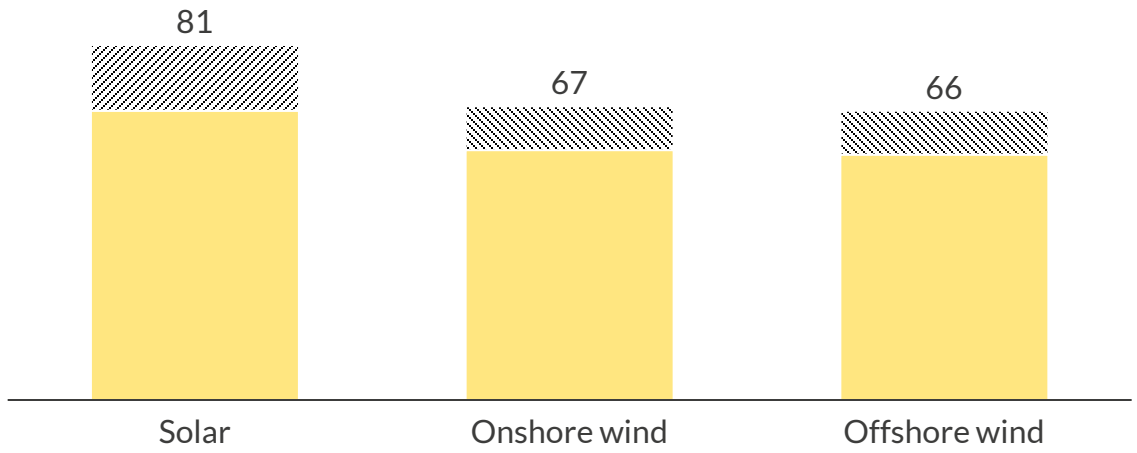
X = Spot price "Min" = Minimum revenue RB = Refinancing contribution

Minimum revenue by technology

€/MWh

Average volume impact for prices above minimum revenue [2,3]

%



1) Equivalent to the German "*anzulegender Wert*" from the Renewable Energy Act; 2)Volume impact refers to percentage of generation when prices are above the minimum revenue out of total annual pre-curtailment generation ; 3) Average between 2030 and 2050.

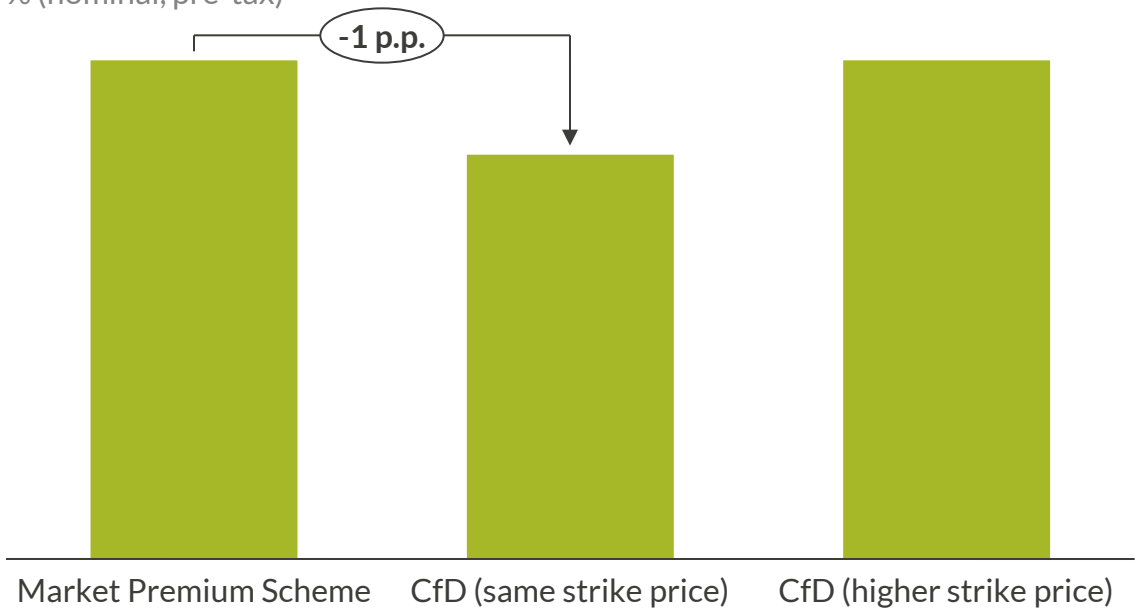
Sources: Aurora Energy Research

Switching to a two-sided CfD could reduce solar and wind IRRs by 1p.p., whereas 7-8 €/MWh higher strike prices could keep IRRs unchanged

Switching to a two-sided CfD could decrease IRR by 1p.p. for solar, which could be compensated if the strike price is raised by at least 7 €/MWh.

Onshore wind could be affected to a similar degree, but it's project returns could be compensated with an 8 €/MWh increase in strike price.

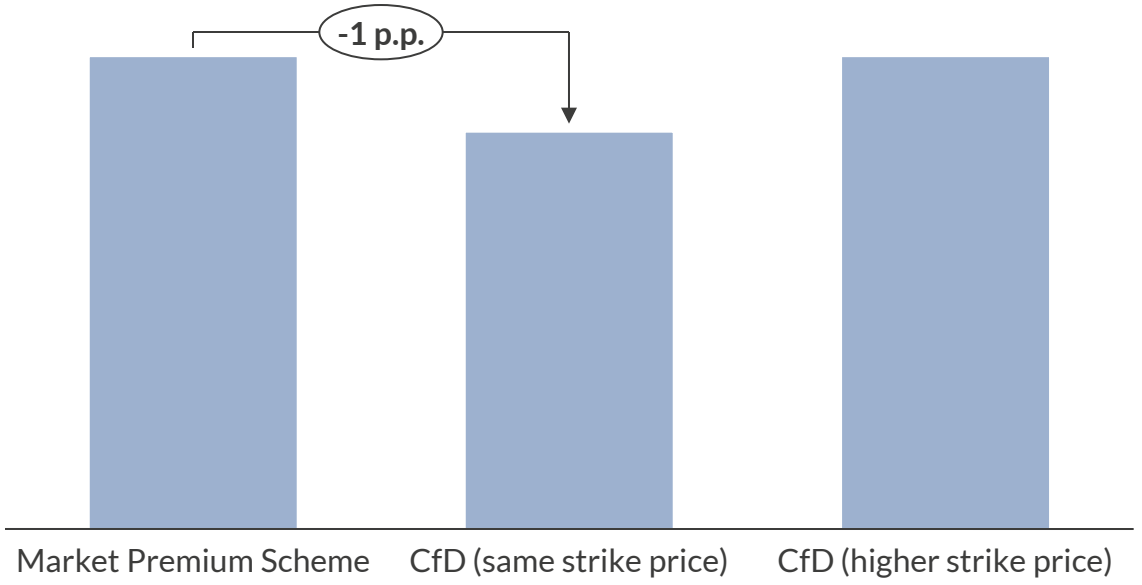
Project internal rate of return[1] - fixed solar PV, COD 2029
% (nominal, pre-tax)



EEG strike price
€/MWh (nominal)

Market Premium Scheme	CfD (same strike price)	CfD (higher strike price)
50	50	57

Project internal rate of return[1] - onshore wind, COD 2029
% (nominal, pre-tax)



EEG strike price[2]
€/MWh (nominal)

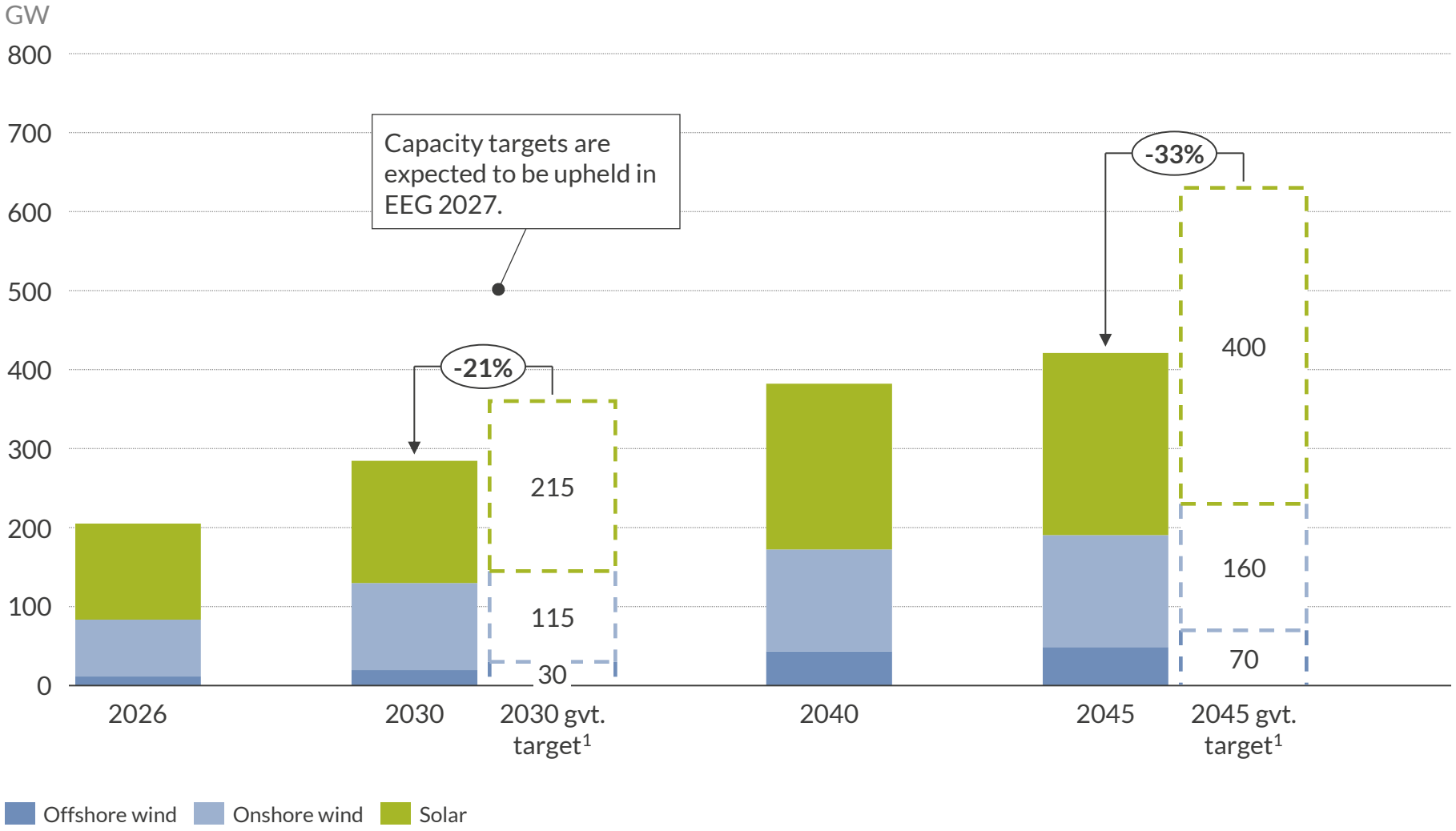
Market Premium Scheme	CfD (same strike price)	CfD (higher strike price)
66	66	74

1) We assume commercial operation date to be in 2029 and an average load factor of 11-13% for solar, considering degradation, and 30% for onshore wind. 2) Strike prices are shown as post correction for onshore wind, assuming a correction factor of 120%.

Source: Aurora Energy Research

Renewables capacity increases more than twofold but falls significantly short of EEG targets in our Central case

Intermittent renewable capacity



1) Reflecting EEG 2023 and Offshore Wind Act. 2) The "*Solarspitzengesetz*" eliminated the payment of subsidies for new-built assets during 15-minute negative price periods for assets >2kWp. Additionally, EEG 2027 plans to limit feed-in of small-scale rooftop solar PV at maximum 50% of their peak capacity.

Source: Aurora Energy Research

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Outlook on renewables capacity

- In our Central case, we expect renewables capacity to fall short of the ambitious EEG target. Slow grid buildout, project financing, and availability of grid connection points remain key risks.
- Additional challenges include:
  - **Offshore wind:** Uncertainty due to more difficult financing conditions, delayed projects and high investment costs.
  - **Onshore wind**: Long realisation periods, as well as low public acceptance slow down projects.
  - **Solar**: Adjusted negative price rules for EEG assets and the expected phase-out of the feed-in tariff[2] make it unlikely to reach the targeted 22GW p.a.

Upcoming reforms related to renewables subsidy schemes and grid financing pose uncertainty on financing of renewables

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The planned Netzpaket, the grid fee reform, and the EEG reform demonstrate components that can potentially expose renewables to additional costs and negatively impact their business cases.

		Relevance for RES	Impact on RES business cases
EEG reform	Extended EEG auctions	◕	↑
	Clawback mechanism	◕	↓
Reforms for grid financing	Uncompensated Redispatch	◕	↓
	Baukostenzuschüsse (BKZ)	◑	↓
	Generator grid fees	◑	↓

◕ High ◑ Medium ◔ Low ↑ Positive impact ↓ Negative impact

Source: Aurora Energy Research


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