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NERA ECONOMIC CONSULTING

Industry briefing event

Launch of CfD Scheme

Supporting low-carbon electricity generation in Romania

8 December 2021

House-keeping

- The event is scheduled to last approximately 3 hours including a Q&A session at the end.
- Please ask questions throughout the session – you can submit questions using the chat box that should typically be located on the right hand side of your screen.
- You will be kept on mute throughout the session.
- Slides will be made available after the session.

MINISTERUL ENERGIEI

Welcome from the Ministry of Energy

Mr. Dan Dragoș Drăgan, *State Secretary*

Mrs. Elena Popescu, *Director General of the Directorate General Energy Policies and Green Deal*

Introduction from the European Bank for Reconstruction and Development

- First wave of renewables in Romania: c.4.4GW of renewable capacity installed, Romania reached its 2020 NECP renewable targets
- 2030 NECP and Fit for 55%: additional 10 - 11GW of renewable projects to be commissioned by 2030

EBRD is supporting the Ministry of Energy to implement the CfD scheme for wind and solar technologies

- Aim of the CfD is to **attract interest of international investors** by providing a **predictable cash flow stream** which will **enable long term financing** of such projects

- The CfD will allow **end-users to benefit** from the **cheapest form of renewable energy** through an **optimal price discovery mechanism** - market competition attracted by the CfD tenders

- Alongside other types of support and financial instruments which might become available under the Modernisation Fund, and RRF, the CfD scheme will play a **significant role to achieving climate ambitions** for net-zero by 2050

Roxana Simon-Loeys
Principal Banker, Energy EMEA
EBRD

European Bank
for Reconstruction and Development

Speakers

Varinia Radu
Deputy Head of the CEE Energy Projects and Construction Group
Partner, CMS Bucharest

Munir Hassan
Head of Energy & Climate Change
Partner, CMS London

Dr. Clemens Koenig
Senior Consultant
NERA Economic Consulting

Agenda

01 Market context

02 Overview of CfD support

03 How to obtain a CfD

04 Overview of the CfD contract

05 Funding of the CfD scheme

06 Delivery plan

07 Q&A

1) Market context

State of play: Romanian electricity market

NECP 2021-2030 and transposition of 4th Energy Package

Increase in electricity demand

End-of-life for fossil fuel capacities and greater deployment of renewables

Formation of a competitive deregulated market

What is the CfD?

- Two-way support payment which will be the difference between the **strike price** and **market reference price**
- Generator **is paid** by the CfD Counterparty when market reference price is below the strike price
- Generator **pays** the CfD Counterparty when market reference price is above the strike price

- Total revenue of generators per unit of electricity is given by:

  Actual Sale Price + (Strike Price – Market Reference Price)

Illustration of market reference price

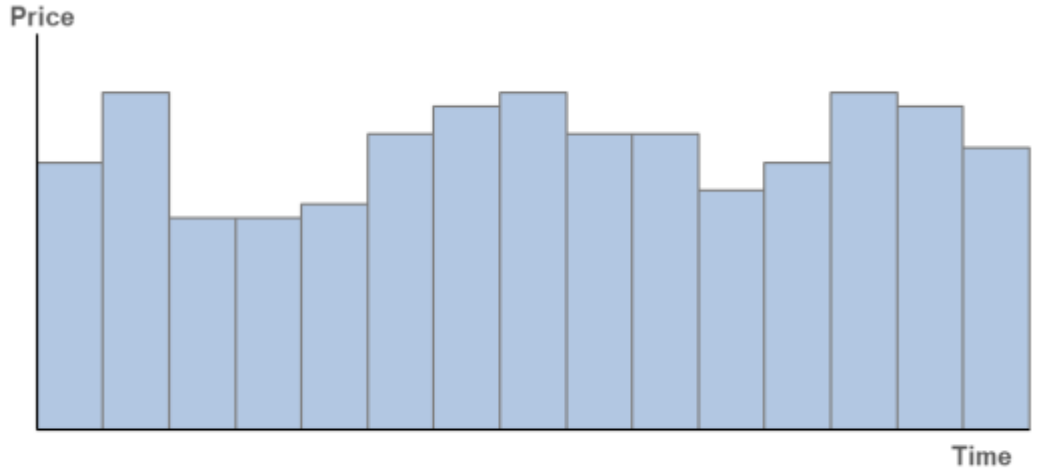
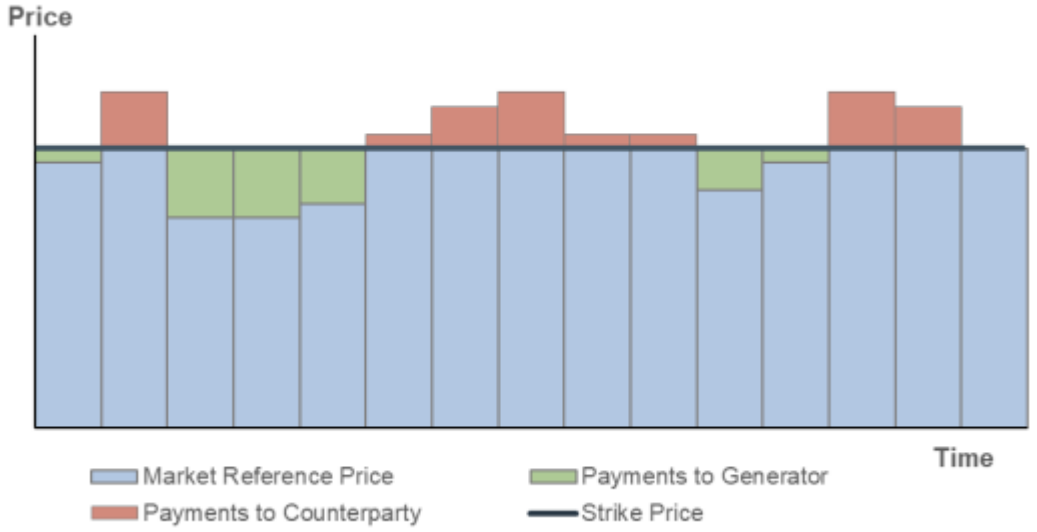
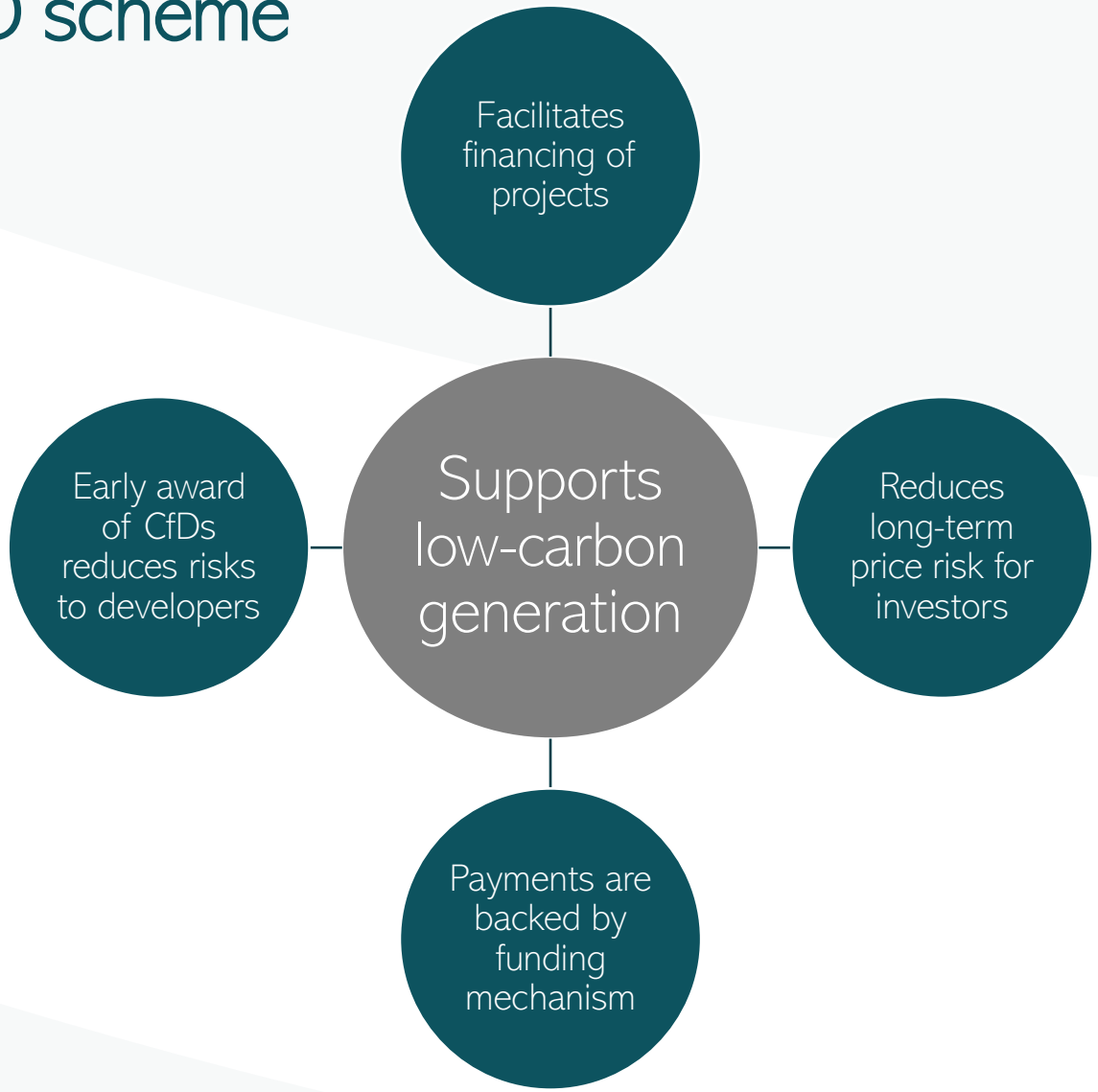


Illustration of CfD payments



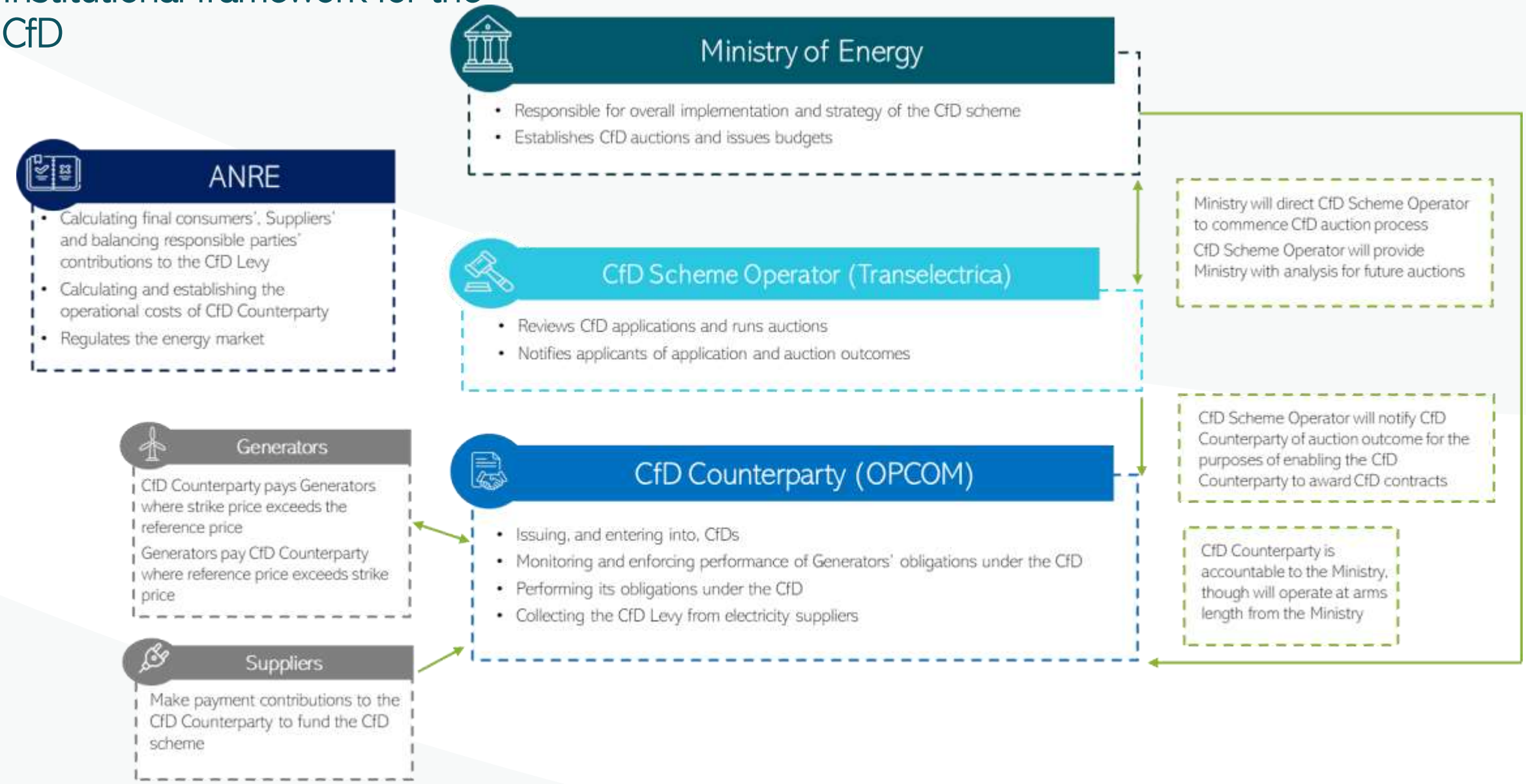
Purpose of the CfD scheme



Benefits of the CfD

- **Removal of wholesale electricity price exposure** by providing a fixed strike price, thereby stabilising project revenue
- **Early certainty and security of support levels** in the project development process
- **Contractual provisions that protect the value of the CfD** (e.g. change in law clause)
- **Improved financing conditions** by providing comfort to lenders with regard to achievable project revenues
- **Robust and reliable private law contractual arrangement** providing developers with a clear set of rights and obligations
- **Better market integration** of renewables through obligation to market electricity

Institutional framework for the CfD



Key implementing documents for the CfD

CfD Law

- Sets out the legal basis for implementation of the CfD scheme
- Primary law which will be supported by secondary instruments which amend existing legislation

CfD Contract

- A bilateral, private law contract which will set out the detailed terms and conditions for the CfD support between a generator and the CfD Counterparty
- Comprises 1) a "front end" contract agreement specifying generator and project details; and 2) standard terms and conditions as issued by the Ministry pursuant to the CfD law

Auction Framework (issued via secondary legislation)

- Sets out the technical procedures which apply to CfD applications and auctions

2) Overview of CfD support

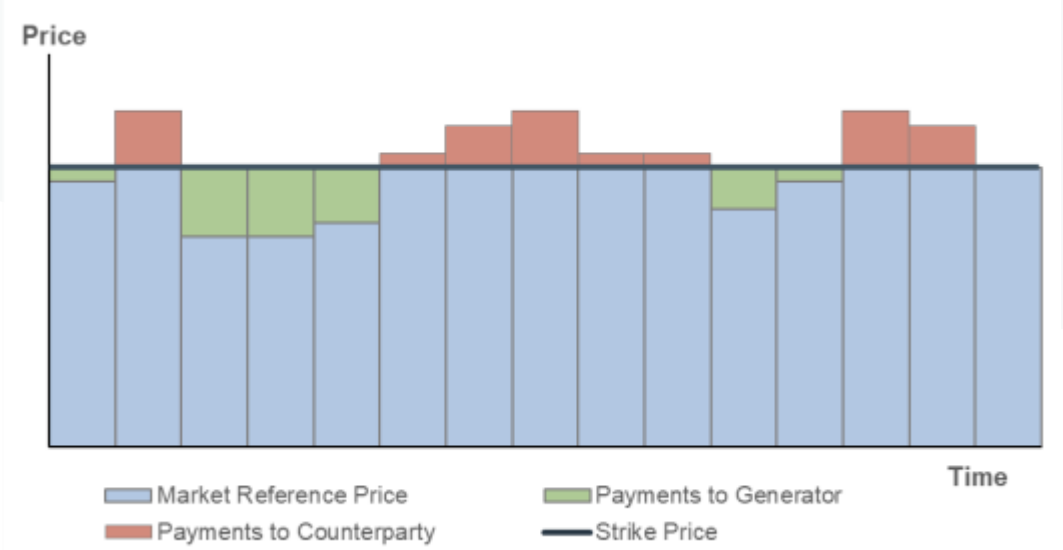
Overview of strike price

- Difference payments ensure stable remuneration of project output:
  - On a **per-MWh** basis
  - For the first **15 years** of project life

- Initial calculation of strike price:
  - Based on bids in the **CfD auction**
  - Two possible approaches:
    - Pay-as-bid: Each auction winner to receive their individual bid as strike price
    - Pay-as-clear: Each auction winner to receive the bid of the highest successful bidder

- Subsequent adjustments to strike price will include:
  - Inflation indexation
  - Adjustments due to certain changes in regulatory costs specified

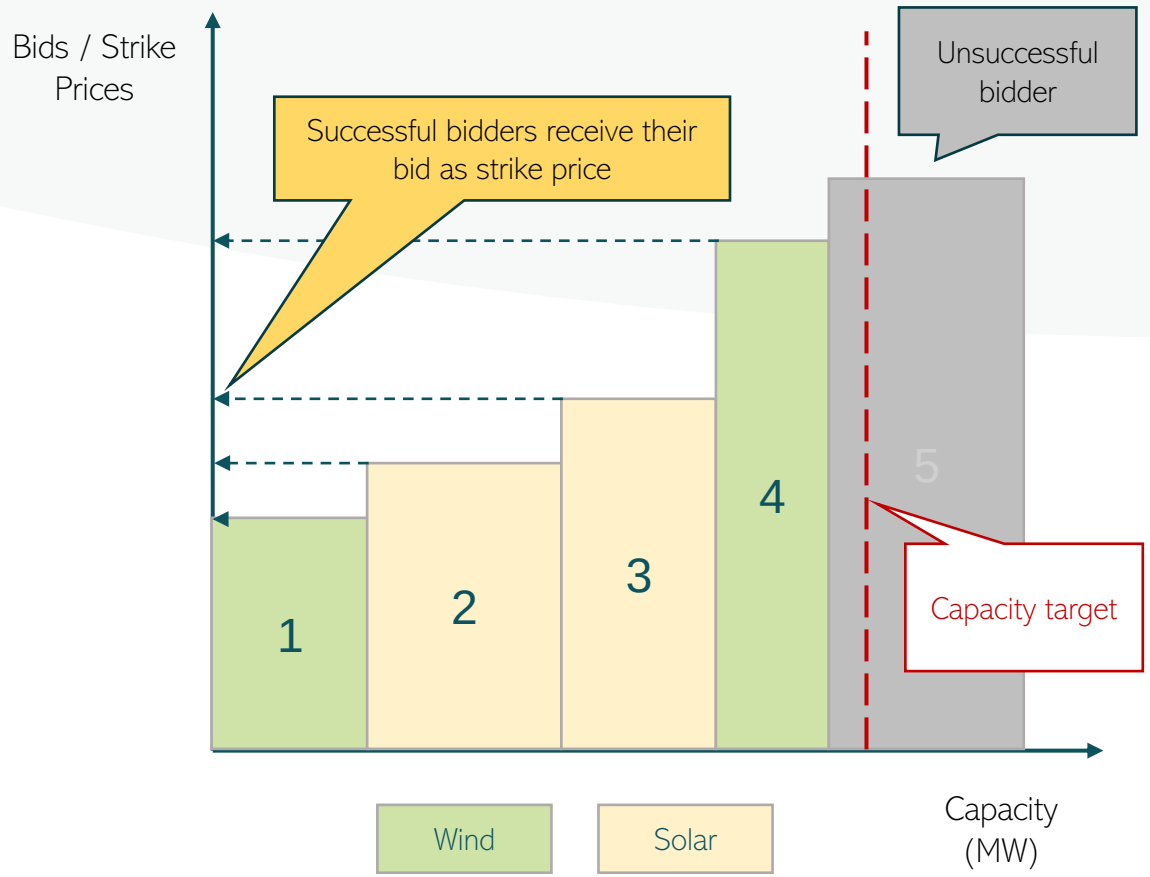
Revenue stabilisation at the level of the strike price



Determining strike prices through auctions

- Qualifying bidders in auction will be ranked based on their strike price bid
- Determination of **auction winners** will be based on a **capacity target** (in MW)
- The Ministry may set additional technology-specific constraints, e.g.,:
  - Minimum capacity targets
  - Maximum capacity caps
- Pay-as-bid or pay-as-clear (to be confirmed) will be the basis for determining the strike prices received by auction winners

Illustration of capacity-based allocation and pay-as-bid



Reference prices are defined along three main dimensions

(1) **Underlying market**: Which market price data will be used?

Forward markets or day-ahead market (depending on the technology)

(2) **Averaging period**: Over which period (if any) will this price data be averaged?

Half-yearly averages

(3) **Technology differentiation**: Will there be any differentiation between technologies?

Basic differentiation between baseload and intermittent technologies, and then further differentiation between the intermittent technologies (wind, solar)

Ex-ante versus ex-post reference prices

- For administrative and liquidity purposes, it is helpful to define an ex-ante as well as an ex-post reference price.

- **Ex-ante reference prices** serve two purposes:
  (1) To calculate the CfD levy going forward;
  (2) To serve as the basis for calculation of provisional CfD payments in the current period (half-year).

- **Ex-post reference prices**, which are the ultimate basis for all CfD payments due, are calculated **after** a given half-year has ended and serve as a basis for "true-up" / reconciliation between the provisional CfD payments already paid and the final payments due that are implied by the ex-post price.

Overview of reference prices

	Ex-ante Reference Prices	Ex-post Reference Prices
Baseload technologies	Weighted average of ROPEX_FM_M (forward-looking)	Weighted average of ROPEX_FM_M (backward-looking)
Intermittent technologies:		
Wind	Same as above, but adjusted by the historical ratio of **wind**'s captured DAM price relative to ROPEX_FM_M from the last available half-year	**Wind** projects' average captured DAM price
Solar	Similar to wind, but adjusted by the historical ratio of **solar**'s captured DAM price relative to ROPEX_FM_M from the last available half-year	**Solar** projects' average captured DAM price

Ex-ante reference prices for baseload generators will be based on current forward market data

ROPEX FM M_t = Price index of forward prices published by OPCOM for month t of period n, on the day of ex-ante price calculation

$$RP^{ex-ante}_{n,Baseload} = \frac{\sum_{t=1}^{6}(ROPEX\ FM\ M_t \times Delivery\ Quantity_t)}{\sum_{t=1}^{6} Delivery\ Quantity_t}$$

Ex-ante baseload reference price for period n

The period n lasts six months and is forward-looking

Delivery $Quantity_t$ = Monthly quantity of forward contracts published by OPCOM for month t of period n, on the day of ex-ante price calculation

Worked example of the calculation of ex-ante baseload reference prices

The table below shows the ROPEX data on **2 November 2020**. The relevant prices for calculation of the ex-ante baseload reference price for **January to June 2021** are highlighted yellow.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ROPEX_FM_M '21	52.24	52.15	51.83	50.18	50.13	50.18	51.50	51.50	51.52	51.48	51.53	51.62
Volume '21	2,658,115	2,416,943	2,660,302	2,225,270	2,290,385	2,221,598	1,741,032	1,741,032	1,686,659	1,747,725	1,693,379	1,743,778

Price x Quantity	138,859,928	126,043,577	137,883,453	111,664,049	114,817,000	111,479,788
Volume	2,658,115	2,416,943	2,660,302	2,225,270	2,290,385	2,221,598

The ex-ante baseload reference price is **€51.18/MWh**

The ex-post reference price for baseload has the same structure as the ex-ante price, but calculated ex-post

ROPEX FM M_t = Price index of forward prices published by OPCOM for month t of period n, on the day of ex-post price calculation (final price index)

$$RP_{n,Baseload}^{ex-post} = \frac{\sum_{t=1}^{6}(ROPEX\ FM\ M_t \times Delivery\ Quantity_t)}{\sum_{t=1}^{6} Delivery\ Quantity_t}$$

Ex-post baseload reference price for period n

The period n lasts six months and is backward-looking

Delivery Quantity$_t$ = Monthly quantity of forward contracts published by OPCOM for month t of period n, on the day of ex-post price calculation (final quantity)

Worked example of the calculation of ex-post baseload reference prices

The table below shows the ROPEX data on **2 August 2021**. The relevant prices for calculation of the ex-ante baseload reference price for **January to June 2021** are highlighted yellow.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ROPEX_FM_M '21	53.27	52.62	51.15	50.15	51.02	52.81	57.89	58.48	56.11	56.14	56.53	56.66
Volume '21	4,354,317	4,124,362	5,512,639	5,219,663	5,381,726	5,195,401	4,547,017	4,427,534	4,023,960	4,079,038	4,011,270	4,155,629

Price x Quantity	231,954,467	217,023,928	281,971,485	261,766,099	274,575,661	274,369,127
Quantity	4,354,317	4,124,362	5,512,639	5,219,663	5,381,726	5,195,401

The ex-post baseload reference price is **€51.75/MWh**

For intermittent generators, we recommend further differentiating between technologies

Ex-ante

Underlying market: ROPEX_FM_M, adjusted for the technology-specific capture rate

Ex-post

Underlying market: ROPEX Day Ahead Market (Price Series: ROPEX_DAM_H)

Averaging period: Half-yearly

Technology differentiation: Between different intermittent technologies, i.e. wind and solar would have different reference prices

The ex-post reference price for intermittent generators will be an output-weighted average of DAM prices

Ex-post intermittent reference price for reference period n and intermittent technology group k

$DAMP_t$ = DAM price in hour t of the period n

$$RP_{n,k}^{ex-post} = \frac{\sum_{t=1}^{4380} DAMP_t \times q_{t,k}}{\sum_{t=1}^{4380} q_{t,k}}$$

$q_{t,k}$ = output produced by technology k in hour t of the reference period

The period n lasts 6 months and is backward-looking i.e. the 6 past months

The ex-ante price for intermittent generators will be based on forward prices and an estimated capture rate

Ex-ante intermittent reference price for reference period n and intermittent technology group k

Ex-ante baseload reference price for period n

$$RP_{n,k}^{ex-ante} = RP_{n,Baseload}^{ex-ante} \times Capture\ Rate_{n,k}$$

The **Capture Rate** is the ratio between intermittent and baseload reference price in the same half-year period one year ago.

Worked example of the calculation of ex-ante intermittent reference prices

On 2 November 2020, the **ex-ante reference price for onshore wind** for the **Jan-Jun 2021** period is as follows:

(1) **Capture rate for onshore wind**:[1]

- Ex-post reference price for onshore wind (Jan-Jun 2020): **€31.02/MWh**
- Ex-post baseload reference price (Jan-Jun 2020): **€54.06/MWh**

This implies a **capture rate** of **57%**.

(2) **Ex-ante baseload reference price for Jan-Jun 2021**: **€51.18/MWh** (as shown above)

➡ **Ex-ante reference price for onshore wind for Jan-Jun 2021**: **€29.37/MWh**

[1] Data obtained from the ENTSO-E Transparency Platform

Reviewing the reference price post-Contract Date

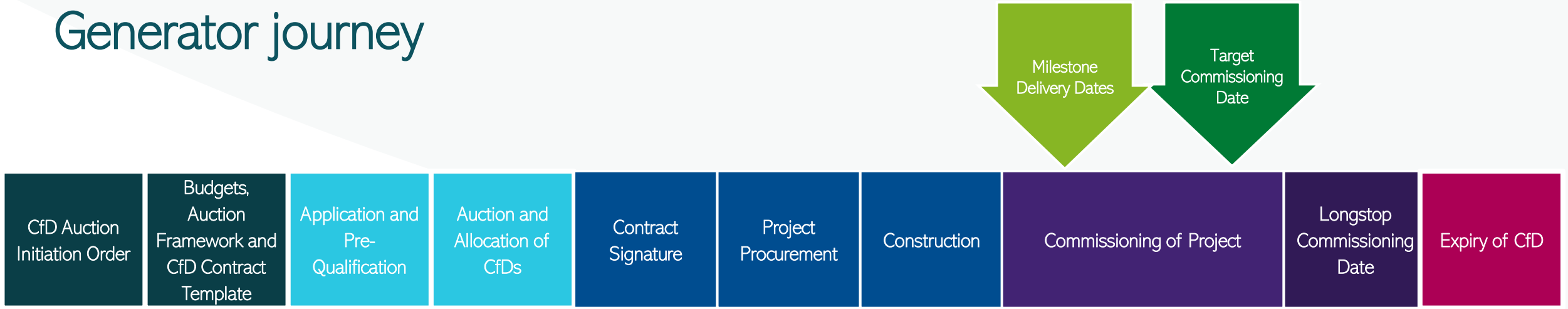
- Market reference price can be reviewed post-signature of CfD contract if new regulations make the reference price inappropriate
- This ensures the reference price remains an appropriate measure of electricity prices over the term of the CfD
- CfD Counterparty will review the reference price in accordance with parameters of the CfD contract and submit to ANRE for decision
- Any disputes in relation to the reference price can be referred to an expert in accordance with the referral procedure set out in the CfD contract

No premium payment if the day-ahead market price is negative

- EU State Aid Guidelines state that supported producers should have no incentives to generate electricity in times of negative prices
- To ensure supported producers have no incentives to generate when the DAM price is negative, there should be no payment of the premium from the first hour of negative prices in the DAM
- This ensures full alignment with EU State Aid Guidelines and reflects the direction taken by RES policy in other countries

3) How to obtain a CfD

Generator journey



Establishing CfD auctions and Budgets

Establishing CfD auctions

- Ministry of Energy will establish a CfD auction by publicly issuing notice of its intention to hold an auction

Budgets

- Ministry of Energy will publish a budget for each CfD auction
- Budgets will be allocated to specific types of generation technologies
- Ministry of Energy will "translate" budgets into capacities for the auctions

Overview of auction process – *Auction targets*

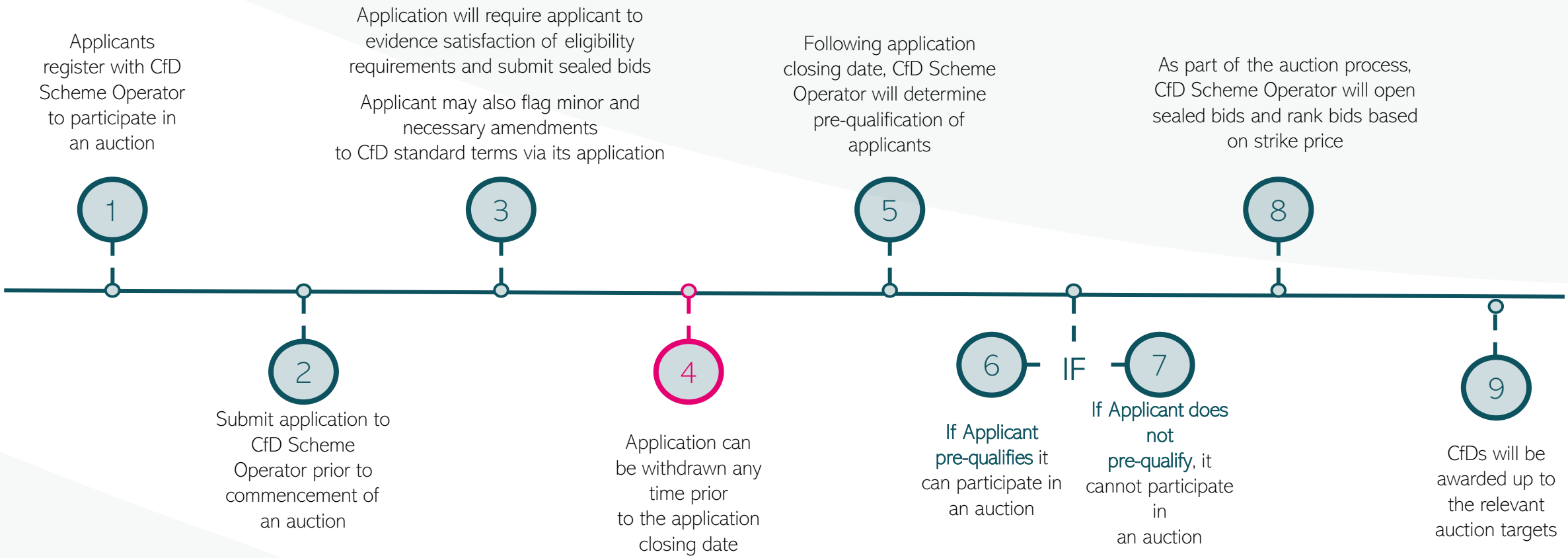
- Auctions will either be multi-technology or for a single technology

- Single-technology auction:
  - The auction target will be expressed in MWs of capacity.

- Multi-technology auction:
  - There will be a global target for the overall amount of capacity (in MW) to be procured.
  - This can be complemented by minimum and/or maximum amounts for each of the technologies covered by the auction.

- Auctions will also specify a maximum strike price (reserve price) for each technology

Overview of auction process - *Application and pre-qualification*



Overview of auction process - *Key eligibility requirements*

Eligibility criteria	Requirement
Eligible technologies	Will vary by CfD auction, will include onshore wind and solar
Minimum capacity	No explicit minima
Grid connection	Grid connection permit
Supply chain plan	Statement providing an overview of supply chain for the Project
Bid bond	Payable by all bidders and refunded after closure of auction and CfDs awarded

Overview of auction process - *Review of bids and allocation of CfDs*

A sealed bid submitted by a bidder will specify the technology, offered capacity and offered price

The CfD Scheme Operator ranks all bids from eligible bidders by offered price

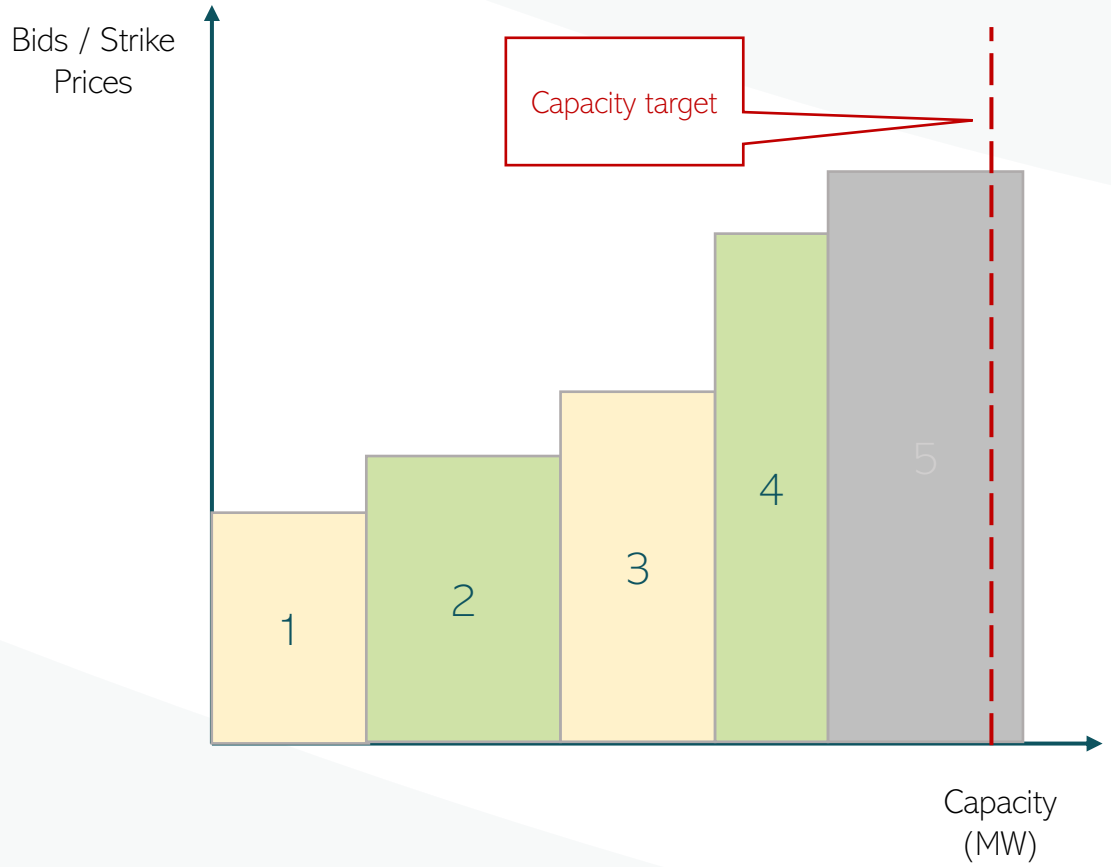
Once a bid violates a capacity constraint, several options exist for such a "marginal" bidder (to be confirmed)

E.g., the bidder could be asked to accept a reduction in their capacity such that the allocation constraint is exactly met

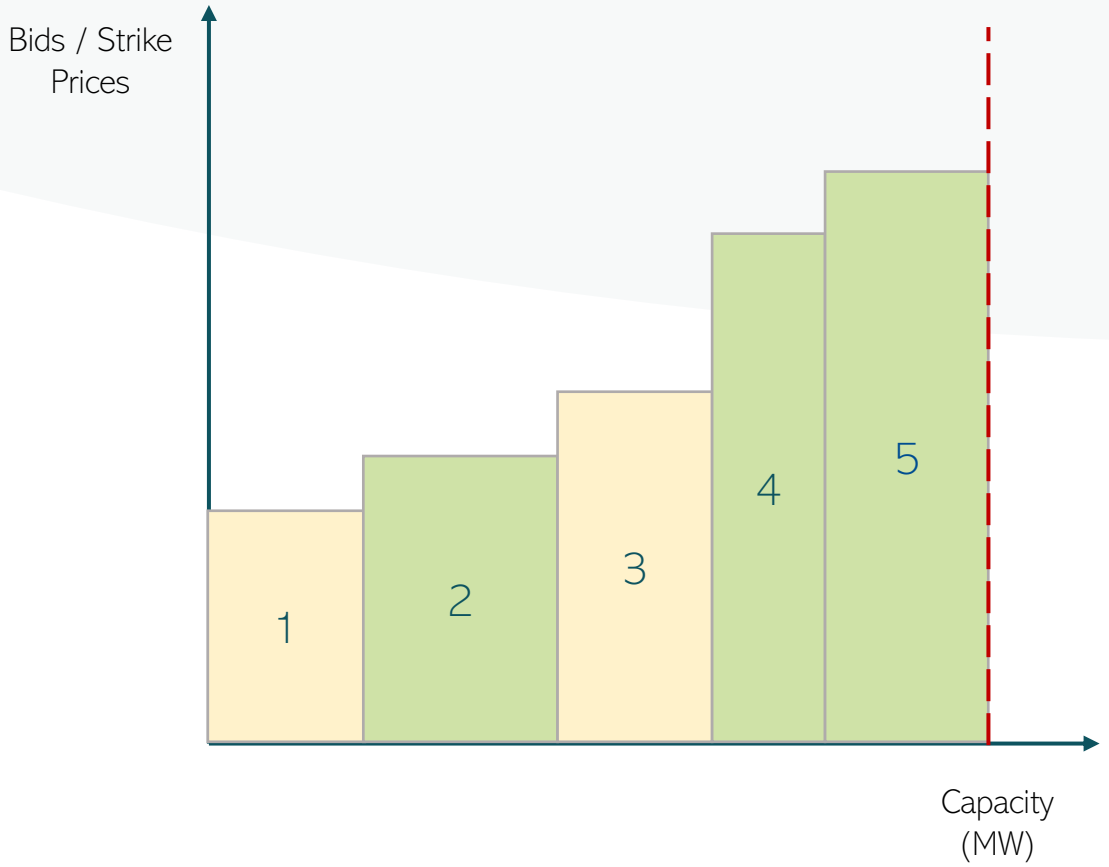
If there is a tie between two marginal bidders in terms of offered price, preference should be given to the bidder with the smaller offered capacity

Example of potential treatment of marginal bids

The capacity offered by Bidder 5 does not fit



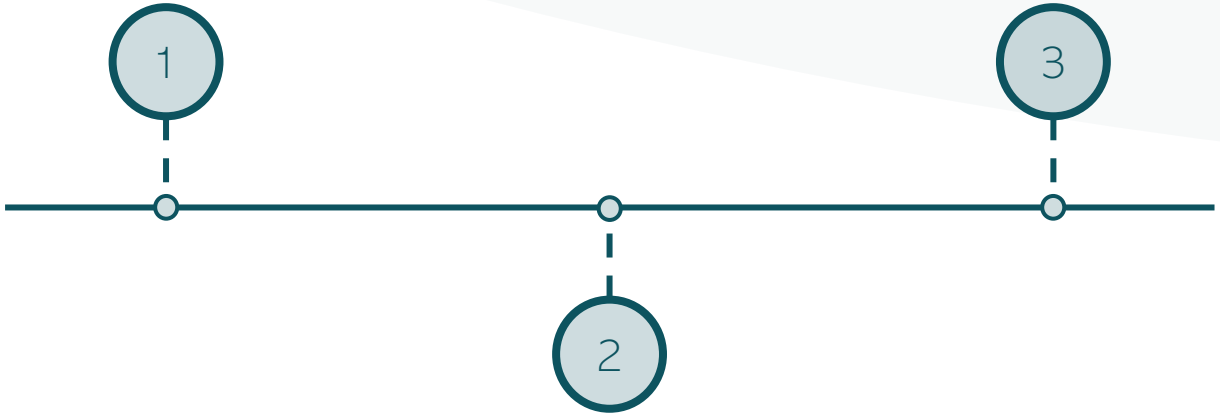
By agreeing to a reduced capacity, Bidder 5 can pass



Overview of auction process - *CfD offer and signature*

CfD contract will be offered to successful generators within 5 working days* of auction closure

Where a generator fails to execute its CfD contract within this period, the CfD will be revoked and CfD Scheme Operator will draw on the bid bond



CfD contracts must be executed by the generator within 10 working days* of issue

*or any longer period as notified by the CfD Counterparty as reasonable in the circumstances

CfD support and other subsidies

- The CfD scheme will be open to **new generation projects only** and will not be available to existing facilities

- A generator will **not** be able to receive CfD support **and** other government subsidies, unless specifically permitted by the rules

4) Overview of the CfD Contract

Key CfD contract terms – *Overall structure*

Parties: Generator and CfD Counterparty

Contract length: 15 years from target commissioning date

Draft contract structure:

1. Part 1: Term
2. Part 2: Conditions Precedent and Milestone Requirements
3. Part 3: Adjustments to Capacity
4. Part 4: Financial Obligations, Pricing Mechanisms and Metered Output
5. Part 5: Billing and Payment
6. Part 7: Representations and Warranties
7. Part 8: Termination
8. Part 9: Force Majeure and Change in Law
9. Part 10: Security
10. Part 11: General

Key CfD contract terms – *Conditions Precedent*

Initial Conditions Precedent

To be provided after the date of the CfD

Includes providing copies of:

- Constitutional documents
- Board resolution approving entry into CfD
- Extract board minutes approving Project's final investment decision
- Group structure chart
- Latest audited financial statements
- Site plan
- Technical memo describing the Project
- Relevant licences, permits and authorisations for the Project

Start Date Conditions Precedent

To be provided to commence the "Start Date" of CfD

Includes:

- Evidence that Generator is complying with metering obligations
- Evidence that all metering equipment is satisfactorily installed, tested, commissioned and maintained
- Evidence that the installed capacity of not less than a specified percentage of the estimated capacity of the Project has been commissioned

Key CfD contract terms – *Milestone Requirements*

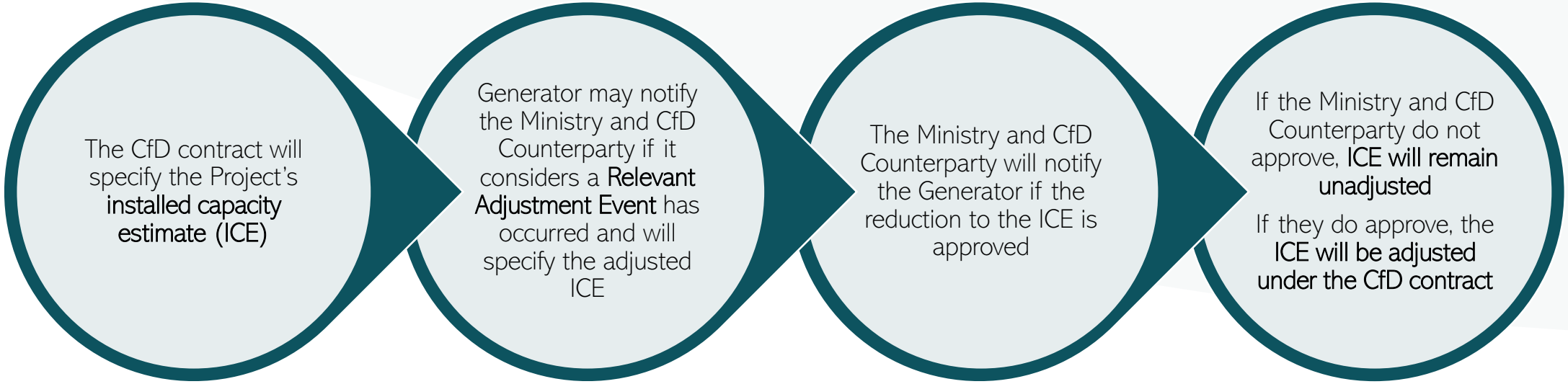
The CfD contract will set out Milestone Requirements for the Project which demonstrate appropriate progress in procuring the Project, which may include:

The Generator demonstrating that its direct shareholders have in aggregate spent 10% or more of the total project pre-commissioning costs on the Project by the relevant **Milestone Delivery Date** specified in the CfD contract

Technology / Project specific commitments, e.g. relating to the purchase of material equipment for the Project, to be satisfied by the relevant **Milestone Delivery Date** specified in the CfD contract

A **Target Commissioning Date** for the Project will be specified in the CfD contract, which if missed will lead to day for day erosion of the period of support under the CfD contract, and a subsequent **Longstop Commissioning Date** which if missed will give the CfD Counterparty a right to terminate the CfD contract

Key CfD contract terms – *Adjustment of capacity*



***Relevant Adjustment Event**

Means an event which occurs during the development phase of the Project which the Generator was not aware of at the date of the CfD contract and by which the permits and consents granted to the Generator in respect of the Project renders it unable to construct the Project to the ICE

*ICE can only be reduced not increased, time restrictions on adjustment will apply

Key CfD contract terms – *Termination*

Limited rights to terminate the CfD contract, no termination rights for the Generator. CfD Counterparty may terminate CfD contract in limited scenarios:

Pre-Start Date termination scenarios include:

- Failure to satisfy a condition precedent
- Failure to satisfy a milestone requirement
- Insolvency
- Non-payment
- Breach of material obligation
- Credit support default

Post-Start Date termination scenarios include:

- Final installed capacity is lower than the relevant percentage of installed capacity estimate to be delivered
- Insolvency
- Non-payment
- Breach of material obligation
- Credit support default

Termination prior to Start Date = no termination payment
Termination post-Start Date = termination payment payable in accordance with formula specified in CfD

Key CfD contract terms – *Force Majeure*

- Force Majeure protection for the Parties will be included in the CfD contract
- Will permit suspension for affected obligations
- Parties can terminate the CfD contract where Force Majeure event subsists for a specified period of time

Key CfD contract terms – *Performance bond*

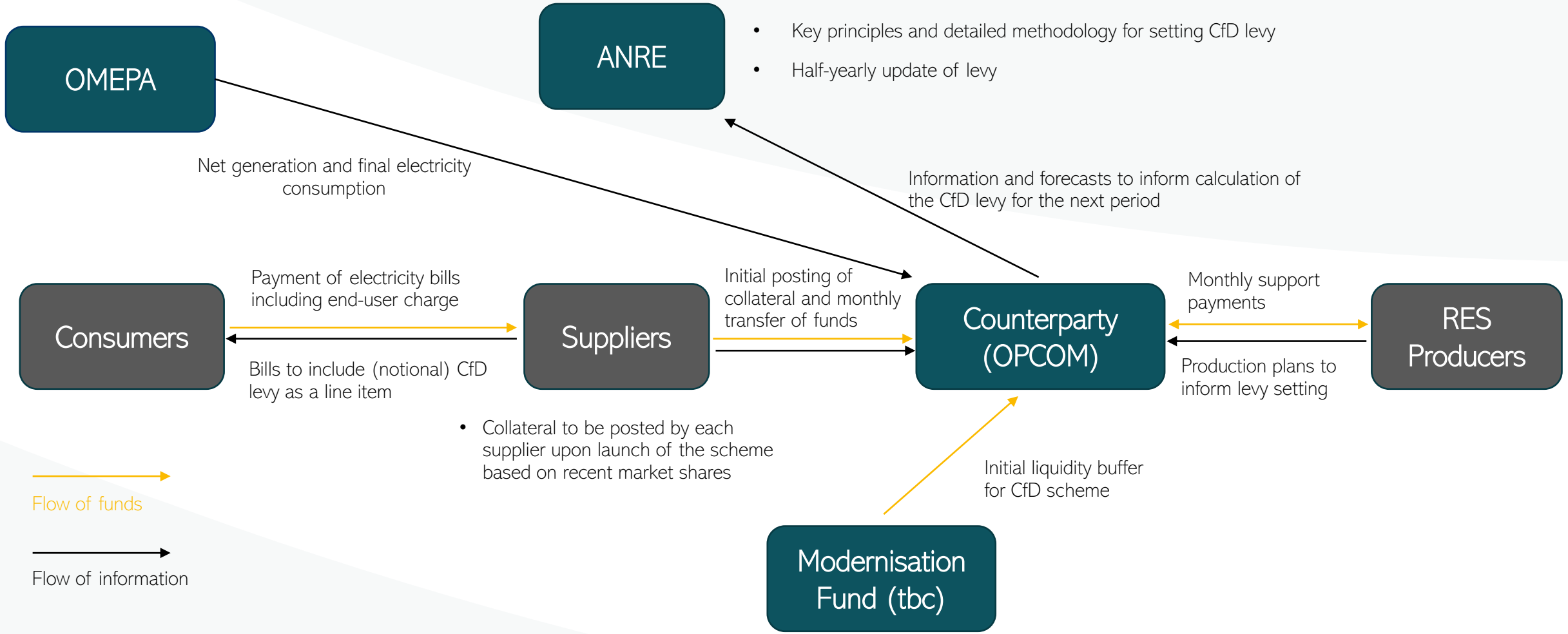
- After signing the CfD contract, each generator will be required to submit a **financial security** to the CfD Counterparty.
- The amount of the security shall **differ by technology**, and will depend on the **estimated investment cost** of the projects in the technology group in accordance with a formula specified in the CfD contract.
- This security is to ensure **timely completion / commissioning** of the projects that have concluded a CfD contract with the CfD Counterparty.
- If the project commissions within the time frame specified in the CfD contract the security will be returned to the generator **in full**.
- Otherwise, penalties computed **per day of delay** shall apply and the CfD Counterparty may draw on the performance bond.

5) Funding of the CfD scheme

Overview of CfD funding

Sources	Liquidity buffer from Modernisation Fund (tbc) Levy on final electricity consumption to be paid by suppliers (but passed on to customers)
Financial collateral	[X]% of strike prices times expected generation
Additional solvency backstops	Government guarantee that it will stand behind the CfD Counterparty in the event of illiquidity and/or letter of credit
Costs covered	CfD support payments, required changes in financial collateral, operational costs (incl. annualised investment costs)
Timing of calculation	An initial ex-ante calculation, followed by a true-up every half year
Frequency of calculation	At least half-yearly, with the possibility to recalculate the fee between each regular update in case of emergency
Frequency of collection	Monthly (at least as often as the disbursement of support)

CfD levy institutional relationships



CfD levy formula

$$CfD\ Levy_n = \frac{\sum i\ Expected\ Production_{i,n} \times (Strike\ Price_i - Ex\ ante\ Reference\ Price_{k,n}) + Estimated\ Operational\ Cost - Correction\ Factor}{Expected\ Consumption_n}$$

CfD Levy for period *n* (€/kWh)

Summation across all plants *i* with a CfD

Expected production of plant *i* for period *n* (kWh)

Strike price of plant *i* (€/kWh)

Ex-ante reference price for technology category *k* and period n (€/kWh) where is *k* is either baseload, wind or solar

Expected final electricity consumption for period *n* (kWh)

Item not to be included in the mid-year levy adjustment (€)

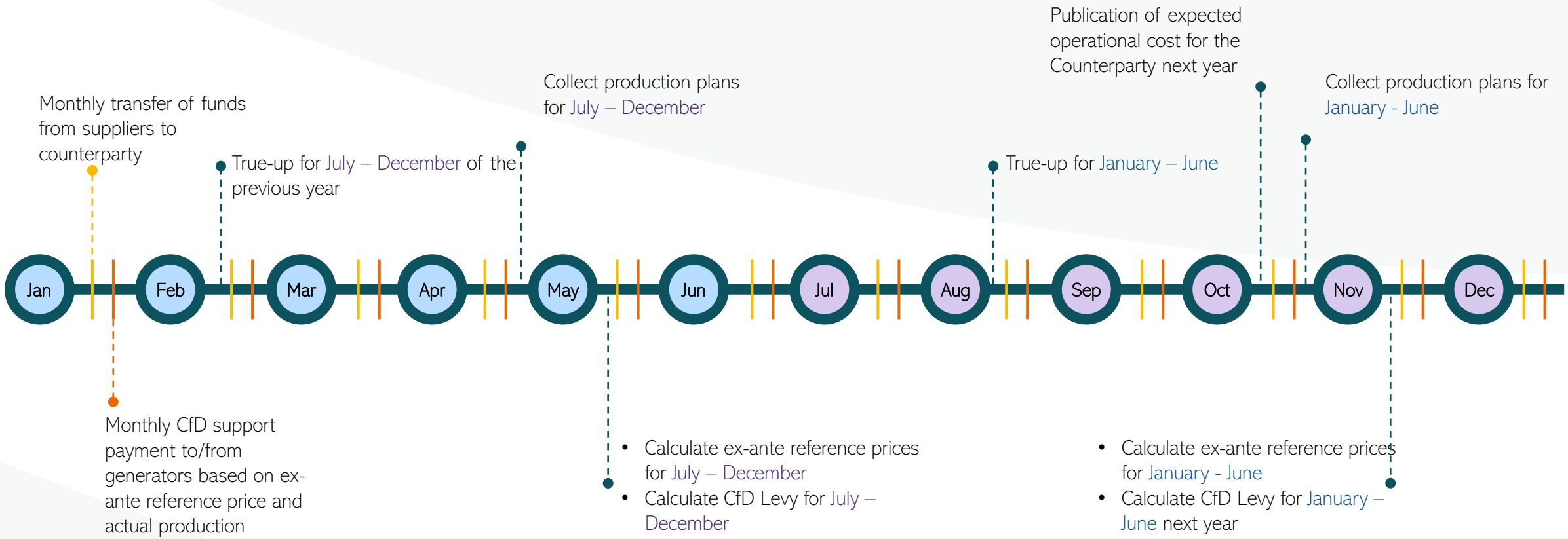
Calculated after true-up of previous period (€)

Correction Factor to take into account:

- *Remaining size of the liquidity buffer**
- *Actual spending on CfDs in previous period after true-up*
- *Levy receipts in previous period*
- *Required change in financial collateral*

*Depending on the size of the remaining buffer, the levy may therefore be zero.

CfD levy timeline



6) Delivery plan

Delivery plan for CfD

- The Ministry of Energy intends to publish drafts of the following key implementing documents in due course for public consultation:
  - The CfD Law
  - The CfD Contract
  - The Auction Framework
- These documents will be published on the Ministry of Energy website, in the “Transparency” section

7) Q&A