Energy Market Design and Long-Term Instruments - Back to the Future?

The Impact of Long-Term Contracts on Network Operation

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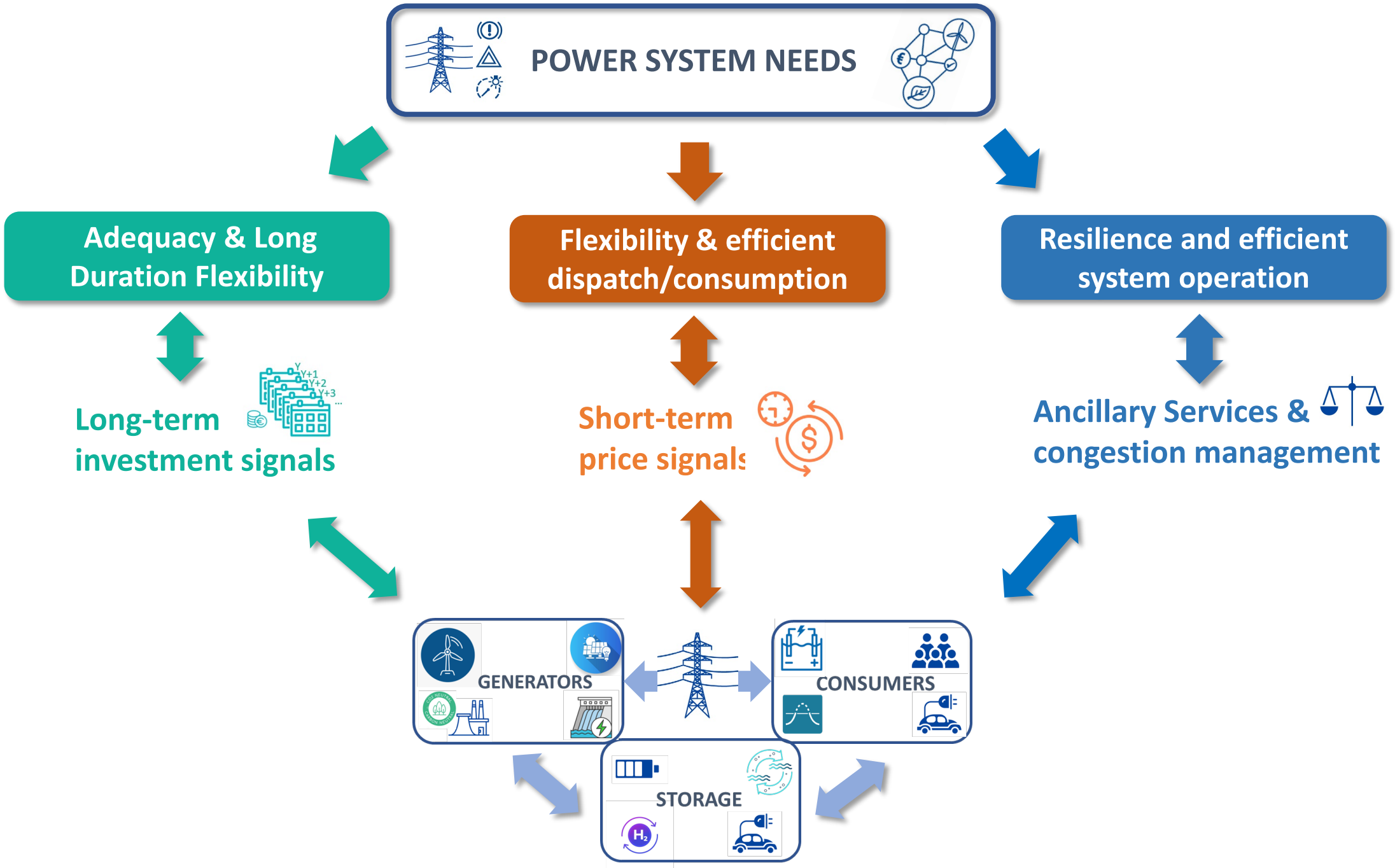
Reliable Sustainable Connected


POWER SYSTEM NEEDS
Adequacy & Long Duration Flexibility
Flexibility & efficient dispatch/consumption
Resilience and efficient system operation
Long-term investment signals
Short-term price signals
Ancillary Services & congestion management
GENERATORS
CONSUMERS
STORAGE

ENTSO-E Vision: Market Design recommendations

Accelerate low-carbon Investments

Introduce **Capability-based 2-way CfDs** for new assets, facilitate uptake of **PPAs** and hedging in **forward markets,** ensure **stable** and forward-looking **regulatory framework**

Ensure system adequacy

Facilitate introduction or amendment of **Capacity Mechanisms 2.0** (incl. Reliability Options and Capacity Subscriptions) **for dispatchable resources** taking into account grid constraints and AS availability

Boost Flexibility & Demand Response

Preserve **short-term price signals**, remove entry barriers, allow **competition behind the meter**, while shielding vulnerable and risk-adverse consumers from price shocks

Reduce system constraints & costs

Strengthen locational signals in wholesale & balancing markets, Capacity Mechanisms, RES Support Mechanism and/or grid tariffs;

Electricity Market Design Reform: ENTSO-E Assessment

Positive Elements

- **Strengthening of investment signals** for low carbon and RES resources (2-ways CfDs, PPAs);
- **Preservation of short-term markets functioning**: no change to marginal pricing system
- **Improved regulatory framework for TSOs:** recognition of anticipatory investments & and of Opex (along with Capex)
- Recognition of **Flexibility Needs Assessment** as proposed in ENTSO-E Vision
- **Stronger consumer protection and empowerment** (possible use of sub-metering to enhance consumers' flexibility provision)
- New **framework for EU/regional price crisis** giving legal certainty (as opposed to sudden regulatory interventions)

Electricity Market Design Reform: ENTSO-E Assessment

Elements of concern

- **No review nor simplification of Capacity Mechanisms** framework
- Mandatory shortening of **cross-zonal Intraday Gate-Closure time: 30mins** by 2028
- Undue **use of Congestion Income to compensate Offshore RES** for congestions on hybrid interconnectors (Transmission Access Guarantee)
- Untested proposal on **cross-border forward transmission rights (Regional Virtual Hubs)** with significant risks and costs for TSOs and not supported by market parties
- **Flexibility Needs Assessment assigned to NRAs and too short deadline for ENTSO-E to develop methodology** (1 March 2024)
- New REMIT framework imposing **burdensome monitoring obligations on TSOs** leading to inefficient overlaps and possibly driving liquidity to OTC/bilateral trades

Long Term Contracts and Impact on Network Operations

- Long Term Contracts, Market Design and System Operation
- Capacity Mechanisms
- Contracts for Differences
- Long-Term Transmission Rights & cross-zonal hedging

Long-Term Contracts, Network Operation, Market Design

Market Design & Network Operation

- **Market design must incentivise investments, dispatch and consumption in line with system needs**
- This will facilitate - rather than complicate - efficient use of the network and system operation, leading to a **more stable and secure system at the lowest cost for consumers.**

Strenghten Long Term investment signals & liquid hedging tools

- **Long term contracts** for RES & low-carbon resources (2-ways CfDs, PPAs) as well as for dispatchable resources (Capacity Mechanisms) **are essential to accelerate the energy transition while ensuring system adequacy.**
- **Liquid hedging tools** for generators, suppliers, traders and consumers are also key **to reduce risk exposure** to price volatility

Well designed and fit-for-purpose long-term instruments

- Any long term contract needs to be **carefully designed and introduced after proper assessment**:
  - Avoid full-scale roll out of untested solutions (e.g. Virtual Hubs) increasing uncertainties and network costs
  - Design asset remunerations ensuring efficient dispatch (e.g. disincentivise injection during negative prices) and maximising participation to balancing markets
  - Allow revenue redistribution in times of high prices (2-ways CfDs, Reliability Options)
  - Where appropriate, reflect location constraints to incentivise siting consistent with grid capabilities and take into account provision of non-frequency ancillary services (e.g. reactive power, inertia, black start)

Efficient ST markets for dispatch & flex

- Preserve **undistorted short term price signals, liquidity and market integration of Day-Ahead, Intraday and Balancing markets** for efficient dispatch and for incentivising flexibility, demand response, energy savings

Capability-based 2-way Contracts for Differences

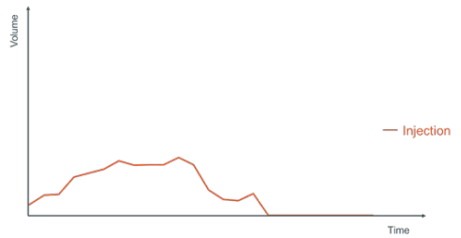
Principle

Capability-based CfDs are designed to settle the 2-way CfD payment on the *maximum possible* injection rather than on the *actual* injection

Traditional (2-sided) CfD

Payment based on injection:

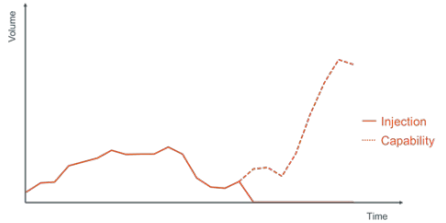
$$premium[€/MWh] = p_{strike} - p_{ref}$$
$$payback\ [€] = premium * P_{injected}$$



Capability-based (2-sided) CfD

Payment based on capability:

$$premium[€/MWh] = p_{strike} - p_{ref}$$
$$payback\ [€] = premium * Capability$$



Design & Implementation

- Decoupling remuneration from injection **removes the risk of possible market distortions** deriving from potential perverse bidding incentives linked to DA, ID and balancing market prices
- As other 2-ways CfDs, **strong long term investment signal** and **stable framework** set by the duration of the CfD & retains proportionate subsidy where **windfall profits can be captured**
- **De-risk volume component** for a windfarm, relating to e.g bidding zone configuration or possible congestion
- **Can be combined with PPAs** in back-to-back or 2-stage tender to provide hedging tools to consumers/suppliers

Recommendation for Market Design Regulation

- ✓ **Allow MS to design CfDs decoupling remuneration from injection** and to distribute **revenues to consumers in the form of hedging tools** (not only proportionally to their consumption)
- ✓ **Keep CfDs voluntary** instrument for **new investments**, with strike price defined in a competitive manner

Capacity mechanisms 2.0

Principle

- **Capacity Mechanisms** are likely to be **necessary in most EU markets to ensure adequacy** due to **increasing uncertainty** on 1) operating hours of flexible assets; 2) frequency, magnitude & acceptability of scarcity prices; 3) regulatory intervention.
- The **market design reform is an opportunity** to allow MS to introduce fit-for-purpose **CRMs as a structural element** - rather than a last resort measure - of their market design, to meet specific system needs during the energy transition.

Design & Implementation

- Design should **consistent** with need to **accelerate decarbonization** of the power system and to avoid lock-in effects;
- No discriminatory access (incl. RES, storage, DSR), fair remuneration, minimise distortions to wholesale markets
- **Reliability options** models can be useful to provide stable revenue streams while limiting windfall profits
- **Capacity Subscription** models can reward flexible consumers and lower overall adequacy requirements/costs
- **Locational constraints/signals** to secure/incentivise siting of capacity consistently with grid capabilities & system needs
- Decreasing **ancillary services availability** to be considered both in system adequacy assessments and in CRM design

Recommendation for Market Design Regulation

- ✓ EU Regulation (incl. State Aid Guidelines) should facilitate Member States **introduction or amendment** of CRMs via **faster, clearer** and more **fit-for-purpose processes**;
- ✓ In the longer run, in case of wide-spread introduction of CRMs, a future **EU framework** would be needed to 1) streamline CRM designs in line with the long-term policy objectives, and 2) increase EU/regional coordination

Long Term Transmission Rights & Regional Virtual Hubs

Principle

- Growing **price volatility increases the need for hedging opportunities; however most European markets are not sufficiently liquid** for a number of reasons
- Current **design of forward markets and cross-zonal hedging tools needs quick & practical improvements** to ensure better protection of market participants.

Design & Implementation

- **Address root-causes of lack of liquidity**: collateral requirements, regulatory uncertainty, limited incentives to hedge
- Identify possible solutions and **assess costs, benefits, risks, implementation timeline**
- **No one-size-fits-all solutions:** both a) **Long-Term-Transmission-Rights (LTTRs) issued by TSOs** and b) **purely financial forward markets** could suit different contexts
- **Regional Virtual Hubs are complex, risky, unwanted by market participants.** Uncertainties on capacity calculation, reference prices, financial regulation obligations, implementation timelines & costs, etc.
- **More practical solutions exist**: more frequent auctions, different product maturities, FTR obligations, secondary markets. Quicker implementation is feasible provided regulatory solutions address TSOs risks

Recommendation for Market Design Regulation

- ✓ Remove mandatory implementation of Regional Virtual Hubs;
- ✓ TSOs to assess implementation of practical solutions and of Regional Virtual Hubs and submit it to ACER
- ✓ Assessment results to be basis for amendments to FCA Guideline

Conclusions

- The required **speed of the energy transition and huge investment challenges require stronger long-term price signals in different forms:** CfDs, PPAs, Capacity Mechanisms, Forward Markets, hedging instruments

- European Regulation should define a clear, stable and practical framework: define **key design principles at EU level while leaving details for national implementation**

- New LT contracts need to **preserve liquidity in forward, DA, ID, Bal and retail markets**

- **To ensure efficient network operation**, **market design and LT contracts design must incentivise investments, dispatch and consumption in line with system needs.** This will ensure the use of the most efficient resources in each timeframe and at every location for the benefit of consumers