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Retail Market Functioning: Q&A Paper

Eurelectric position paper

February 2026

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:
- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

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Customers & Retail Services Committee
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Retail Market Functioning: Q&A Paper

A Eurelectric position paper February 2026

BACKGROUND

This paper was compiled in collaboration with Eurelectric member companies from several European Member States. It aims to provide explanations and guidance to interested stakeholders on the essentials of retail markets, their interaction with wholesale markets, and their overall place within the EU internal electricity market. The paper addresses the following topics:

- factors determining the price of electricity;
- components of retail prices and consumer bills (energy supply; network; taxes/levies);
- key actors and their responsibility and role in electricity markets, with a closer look at energy suppliers;
- the range of different electricity price contracts;
- benefits of a sustainable, low carbon energy system for consumers;
- how consumers can protect themselves from volatile energy prices;
- measures Member States can take to lower electricity bills;
- measures to reduce the indirect impact of gas spot market prices on electricity retail prices and electricity bills while keeping intact the electricity market fundamentals.

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1. What measures could reduce the indirect effect of gas spot market prices on electricity retail prices and on electricity bills without changing the fundamentals of the electricity market design (competitive markets, marginal pricing and the merit order model in spot markets)?

I. Marginal pricing: how the system works

Under Europe's day ahead market, generators submit bids indicating how much electricity they can supply and at what marginal cost. These bids are ranked from the cheapest technologies (wind, solar, hydro, nuclear) to the most expensive, typically fossil fuel plants as these face additional costs (mainly fuel and carbon pricing). Demand is met by moving up this merit order, and the final plant required to meet demand (the marginal unit) sets the market price for everyone. Gas-fired units frequently set this price because their marginal costs are higher and they are often needed during peak demand or low generation from renewables. This system, applied across many other commodities, ensures efficient dispatch, transparency, and competition, while providing the investment incentive for cheaper, cleaner capacity to enter the market and reduce the frequency with which gas sets the price over time. Overall, lasting price stability comes from reducing the hours when natural gas sets the marginal price on spot markets. This will be achieved through more renewables and low-carbon sources in the energy mix, a commensurate buildout of grids to deliver the electricity of these sources to end consumers, demand flexibility, and flexibility solutions (see below).

II. Possible Measures

i. Reduce taxes and levies on electricity

Taxes and levies make up a disproportionate share of retail electricity bills, reaching 27.6% of an average EU household bill in early 2025, up from 24.7% at the end of 2024, even though wholesale electricity prices fell over the same period[1]. Reducing the tax burden on electricity is therefore one of the most effective tools governments have to lower bills without touching wholesale market fundamentals. Under the Energy Taxation Directive, Member States can reduce excise duties down to 0.5-1 €/MWh, and VAT to as low as 5%, yet few apply these minima today. Countries like Germany, which abolished the EEG levy, and Denmark, which will reduce household electricity excise duties to the EU minimum from 2026, demonstrate how targeted reductions can rapidly bring down bills and strengthen the competitiveness of clean electric solutions.

ii. Exempt certain consumer segments or energy uses from taxes and levies

Targeted exemptions can provide relief to those who need it most, while keeping the merit order system fully intact. Energy poor households, who spend a higher share of income on electricity, are a natural priority group for lower excise duties or reduced VAT. Targeted exemptions can also support electric heating uses, such as heat pumps or e-boilers in households and industry, helping replace fossil-based heating with clean technologies. In industrial settings where separate metering of heat use is too complex,

[1] Eurostat (2025): Link

governments can instead reduce VAT or taxes on the purchase of clean technology equipment, offering the same incentive with simpler administration. These exemptions relieve pressure on vulnerable consumers, strengthen the investment case for clean heating, and accelerate electrification, all while preserving undistorted wholesale price formation.

iii. **Shift taxes and levies from electricity to fossil gas**

Taxation in Europe still favours fossil gas over electricity despite electricity being the key energy carrier for decarbonisation. This structural imbalance contributes to electricity being taxed around 1.4 times more than fossil gas per unit of energy[2], undermining affordability and slowing electrification. Overall, this has added to electricity prices being approx. two to three times higher than gas prices in almost all EU countries (electricity-to-gas-price ratio). This discourages electrification and keeps gas-based heating artificially competitive. Shifting part of the fiscal burden from electricity onto gas can correct these distorted price signals in a budget neutral way.

This is already being implemented: Flanders will shift €362 million in taxes from electricity to natural gas and fuel oil from 2028; Finland has reduced electricity excise duties to EU minimum levels for industrial consumers while increasing those on fossil gas; and The Netherlands has systematically raised gas taxes relative to electricity since 2016. Such tax shifting reduces the electricity-to-gas-price ratio, strengthens the business case for heat pumps and electric technologies, and supports climate goals, without modifying marginal pricing or the merit order mechanism. Governments should, however, provide transitional support to households unable to switch from gas in the short term.

iv. **Flexibility solutions: storage and demand response**

One of the most effective ways to reduce exposure to gas-setting hours is to expand system flexibility which includes storage, digitalisation, and demand response. These measures allow consumers to shift consumption to periods of high renewable generation, reducing reliance on expensive marginal gas units. Through implicit demand response (demand flexibility) consumers can actively contribute to the energy transition by changing and adjusting their energy consumption patterns and reduce their energy costs together with the right contract and a smart meter. Overall, a more flexible system reduces peak hour demand, decreases the number of hours in which gas becomes the marginal unit, and therefore dampens the influence of gas prices on electricity bills, all while keeping the market fundamentals intact.

v. **Reduce redispatch and congestion management costs as these are socialised through network charges onto consumers**

Redispatch and congestion management costs across Europe have risen sharply as renewable generation grows faster than the capacity of grids to accommodate it. In 2023 alone, redispatch costs reached €8.7 billion[3], and in 2024 Germany curtailed 9 TWh of electricity at a cost of €2.2 billion[4], costs that ultimately end up in network charges paid by consumers. Minimising these medium-to-long-term electricity system costs requires designing and operating the most efficient system possible. The most effective measures

[2] Eurelectric Power Barometer (2023): Slide 70
[3] Eurelectric, „Deeper market integration to reduce electricity system costs" (2025): Link
[4] Eurelectric Power Barometer (2025): Slide 44

include investing in flexibility, storage, and demand-side response which help system operators better manage variability and reduce the number of hours in which redispatch is needed. Reinforcing and expanding electricity networks (particularly through anticipatory grid investment and streamlined permitting) also reduces bottlenecks that today trigger costly remedial actions.

Also, improving TSO-to-TSO coordination can significantly reduce redispatch costs, as the most efficient remedial actions are not always national. Full implementation of EU rules on coordinated remedial actions (according to ROSC: Regional Operational Security Coordination) would allow system operators to redispatch resources across borders, following a polluter pays approach, instead of relying on costlier national solutions.

Finally, locational investment signals can be used as one way in the existing European market structure to ensure that the cost of investment in new assets (for example RES and low-carbon energy generation) reflects the overall system impact. Such locational signals in support schemes (where necessary) or embedded in connection charges help direct the investments to where they provide the highest system value. This steering can reduce congestion as generation assets are built closer to demand centres and not added to already congested areas. The congestion costs avoided would not have to be socialised through grid charges in consumer bills.

Overall, these measures can significantly reduce electricity system costs in the medium- to long-term by making the system run as efficiently as possible, whilst preserving the integrity of the existing market structure.

2. What determines the price of electricity in Europe?

Rita Alexandra Mota – EDP
Eszter Molnár – E.ON Hungaria

It is important to state that in this section we examine the factors influencing wholesale energy prices. End-user prices are naturally higher, as additional price components are added (see point 2).

Key factors determining wholesale electricity prices in Europe

The European wholesale electricity price is influenced by numerous factors, but fundamentally we are dealing with an interconnected market where prices are primarily determined by competition and the balance of supply and demand. Beyond fundamental factors - such as fuel mix, weather conditions, grid availability, demand and supply conditions - the current economic situation, future expectations, and the political environment also indirectly shape energy market supply and demand and thus have a significant impact on prices.

The energy mix of European countries varies significantly, rooted in their differing power-generation structures. In France, for example, nuclear energy still dominates, while Germany has replaced nuclear and coal-fired power plants with renewable sources - primarily solar

and wind - over the past decade. However, countries that rely heavily on gas as a fuel source for electricity generation for example Ireland, can also be associated with some of the highest electricity prices due to the volatility of fossil fuels prices.

Alongside nuclear, coal-fired, and gas-fired plants, an increasing number of renewable energy facilities are being built across Europe, alongside with investments to optimise renewables, including PSH and BESS, reducing dependence on fossil fuels. However, the weather-dependent availability of less dispatchable renewables (due to temperature, solar radiation, cloud cover, precipitation), can cause substantial supply-demand fluctuations and resulting price differences in the interconnected electricity system. For instance, extreme weather conditions (e.g., heatwaves, prolonged cold spells, floods, droughts, fog) can significantly increase demand, exerting upward pressure on prices. For example, the output of hydropower plants in the Balkans or the Nordic region depends on river flow levels. Low water levels can also hinder the inland transport of raw materials (e.g., coal). Extreme temperatures raise end-user energy demand and transmission losses and can create difficulties in cooling conventional power plants. With the growing share of renewables, the strength and geographical distribution of wind and solar radiation in Europe can cause major price differences. When renewable generation is low, demand for gas and storage capacity increases. During the energy crisis, for instance, the Iberian Peninsula went through a severe drought, which exacerbated the situation by increasing the demand needs for gas-fuelled power plants, at a time when gas prices were skyrocketing.

Another factor is the price of CO_2 allowances. Both short-term fluctuations and long-term trends have a significant effect on the production costs of fossil power plants which is reflected in electricity prices. Also, political and regulatory decisions are decisive as governments decide on taxes, levies, and other charges that are directly added to the final electricity price or indirectly, being incorporated through the electricity value chain. For instance, excise duties on electricity; environmental levies on space occupation or waste; local surcharges. For instance, in Spain, the full tax package on electricity borne by consumers is around 40%.

It’s important, however, to understand that the wholesale market is not just the spot (day-ahead and intraday). The wholesale market is in fact a combination of several market instruments for different maturities, and different markets service a different purpose. The main tools are:

- Adequacy: capacity mechanisms to ensure asset availability for long-term security of supply, either by retaining assets that would otherwise cease activity or by supporting new necessary investment considering the time window until those assets become available.
- Investment incentives and long-term hedging: Power Purchase Agreements (PPAs) and Contracts for Difference (CfDs) with longer maturities, oriented towards investment and asset development, can ensure price and revenue stability for buyer and seller
- Mid-term hedging: both forwards and futures, to hedge positions in maturities ranging up until 2 to 3 years

- Cross-border mid-term hedging for price differences: LTTRs to cover for price difference volatility
- Dispatch optimisation: day-ahead market, with marginal price formation, for dispatch efficiency, as similar to any commodity market
- Program adjustments: intraday auctions and continuous intraday for adjustments to programs closer to delivery
- Near real time delivery: system management, including balancing and other ancillary services, redispatch and others

Overall, European electricity price formation, at wholesale level, is shaped by a complex interplay of technical, economic, political, and environmental factors. The dynamics of these factors are constantly changing, creating both challenges and opportunities for market participants and regulators alike.

3. What are the components of the final electricity price for consumers?

Sophie Collet – ENGIE
Dr. Lucas Reisch - E.ON Energie Deutschland GmbH

Although electricity prices vary across European countries, the final amount paid by consumers typically consists of three main components: energy supply costs, network charges (transmission and distribution), and taxes and levies. It is important to note that there is not a 'standard' electricity bill. All bills are a little different and depend on in which Member State the consumer is located, how much electricity is used and when it us used. Below is an overview of what each of them represents.

Energy supply costs

Energy supply costs cover the expenses incurred by the supplier to procure electricity, largely driven by wholesale prices on European power exchanges. These prices fluctuate based on developments in spot and forward markets. This component is further determined by the supplier's risk management strategies (i.e. financing costs for hedging such as collaterals), sales activities, and operational costs - such as billing, customer service, IT systems, bad debt - as well as the supplier's margin. The scale of these costs differs between suppliers, depending on their procurement strategies and business models – for example, certifying electricity as renewable via Guarantees of Origin (GOs), adds a premium. On average, energy supply costs account for roughly 40%[5] of the final electricity price for household consumers in the EU (2024). Since 2024 for households, the absolute value of this component has steadily declined same as its relative weight of the retail margin as network charges, taxes, and levies have increased.

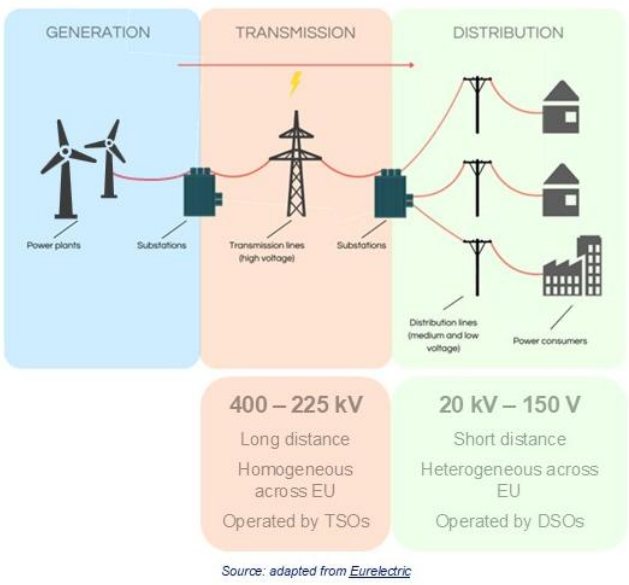
Network costs

Network costs cover charges for using transmission and distribution grids to deliver electricity from generators to consumers. They finance the maintenance, operation, upgrade and expansion of the electricity infrastructure and are strongly influenced by generation and demand of European countries. This also entails the increasing costs

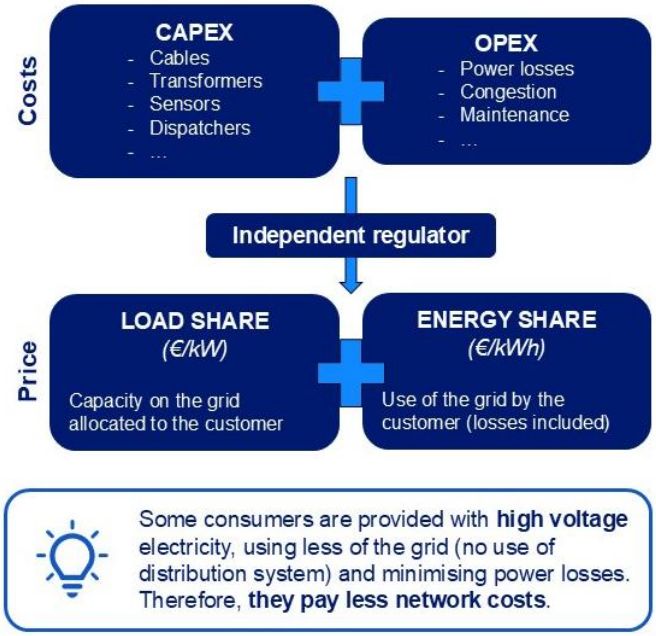
[5] Eurostat (2025) using consumption band DC (2,500 kWh to 4,999 kWh)

for balancing the grid and maintaining its stability considering the increasing share of variable renewable energies in many Member States' energy mixes. Since grids are natural monopolies, network tariffs are either set by national authorities or the system operators (e.g. in Finland and Sweden) to balance financial adequacy for consumers while providing sufficient investment incentives for grid operators to invest. These regulated charges, which, on EU average, constitute around 20-25% of the final electricity price (2024), are identical for all customers. In some Member States the charges are even higher for certain households or industrial consumers. Suppliers do not apply any margin to these costs, which are fully passed through to customers. Nevertheless, the path to climate neutrality coupled with the search of EU competitiveness are supporting a growing electrification of transport and heat. This results in larger investment in networks, leading grid costs to rise further as the energy transition requires substantial investments in the grid infrastructure modernisation, digitalisation, and capacity; while electricity demand increases. The impact of this trend on charges borne by consumers will depend on how regulatory frameworks achieve to keep stable impact on consumers under high investment.

Network costs are linked to system architecture



Source: adapted from Eurelectric



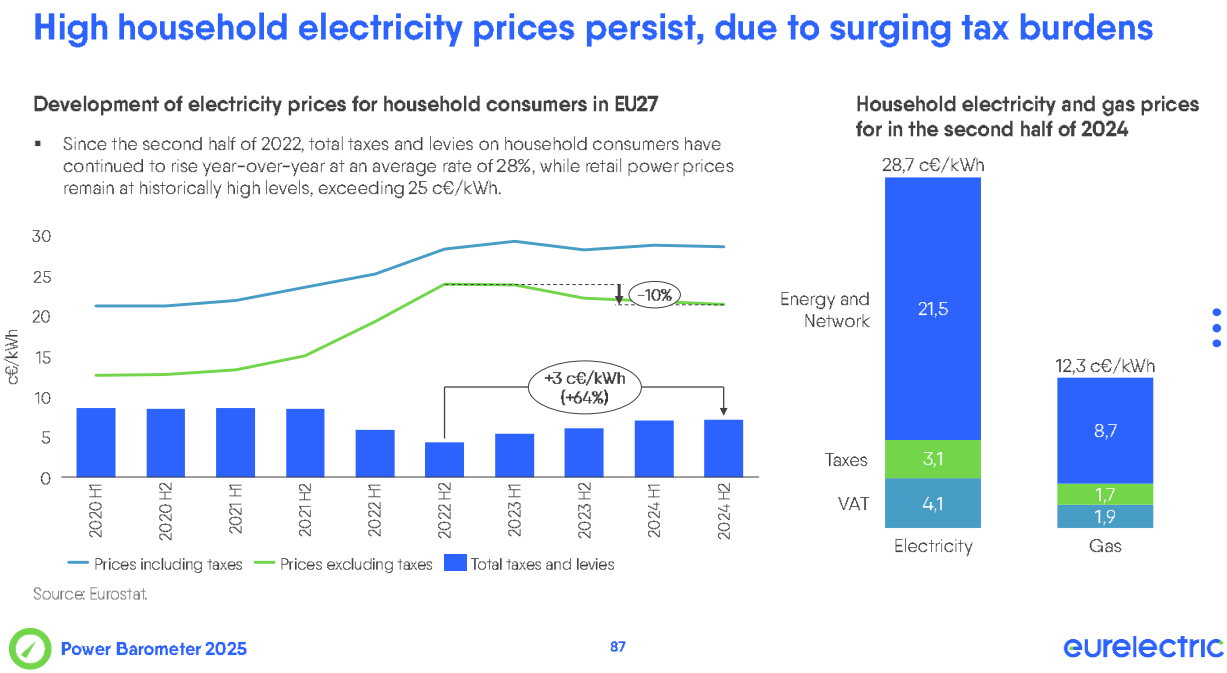
Some consumers are provided with **high voltage** electricity, using less of the grid (no use of distribution system) and minimising power losses. Therefore, **they pay less network costs**.

Taxes and levies

Finally, taxes and levies represent the third component of the electricity bill, accounting for roughly 25% of the total bill in the second half of 2024 in the EU[6]. From a terminology perspective, levies are often considered to encompass excise duties and charges. Taxes typically include value-added tax (VAT) charged on both the energy and network component.

Even though excise duties (de facto a consumption tax) and VAT are both indirect taxes ultimately borne by final consumers, the former differs from the latter in two ways. First, excise duties are a cost component of the product itself and often applied to each kilowatt hour consumed and are included in the taxable amount, i.e. subject to VAT. Second, they are not explicitly itemised on household bills (only on bills to non-households) though exceptions exist across the EU like in Finland and Sweden and Hungary, where the excise duty, charged by the distribution system operator, is listed on the final bill.

Member States are allowed to set national rates for excise duties and VAT within the harmonised maximum and minimum levels stipulated by EU legislation, hence rates differ across countries. Levies, on the other hand, generally finance energy policy-related objectives, such as renewable and low-carbon energy support schemes, financing of cost relief measures for specific customer groups and assets, or non-energy related charges, such as social tariffs or pension schemes. Suppliers act merely as collectors for these charges, transferring them directly to the relevant public authorities.



Overall, transparency in billing is essential, but excessive disclosure requirements risk overwhelming consumers and limiting suppliers' ability to communicate effectively. A well-

[6] 2025 Eurelectric Power Barometer (slide 73)

functioning market should combine clear, comprehensible invoices with balanced grid tariffs. levies and taxes, should ideally be kept near the European minimum levels. Consumers should retain the freedom to choose between suppliers and products - including dynamic contracts - while suppliers need flexibility to design innovative offers and present information in a way that is both accurate and understandable.

4. Who are the key actors in EU electricity markets and what is their role? A short and compact overview

Paul-Erik Vermeulen – RWE
Rita Alexandra Mota – EDP

Key actors in a well-functioning electricity market

Generators

- Produce electricity from renewables (wind, solar, hydro), nuclear, and conventional sources (gas, coal).
- Generation diversity is essential for system adequacy and balancing.
- Market impact: generators respond to wholesale price signals, influencing investment in flexible and low-carbon technologies.

Transmission & Distribution System Operators (TSOs & DSOs)

- Transport electricity: TSOs manage high-voltage, cross-border grids while DSOs handle local networks.
- ENTSO-E (European Network of Transmission System Operators for Electricity: association representing 40 electricity transmission system operators) coordinates cross-border flows and maintain security of supply across the EU; TSO's collaborate through ENTSO-E to implement EU network codes, operate balancing platforms, and optimize cross-border capacity allocation.
- TSOs handle the backbone electricity network and system balancing within their control areas and system operators overall handle more local services including voltage control and congestion management.
- DSOs manage the distribution grid, i.e. the network to which most consumers are connected, that increasingly manage distributed energy resources and flexibility at local level for active distribution system management.

Nominated Electricity Market Operators (NEMOs)

- Operate trading platforms (e.g. EPEX Spot, Nord Pool, OMIE) for day-ahead and intraday markets.
- NEMOs collaborate and coordinate with TSOs on the Single Day-Ahead Coupling (SDAC) and Single Intraday Coupling (SIDC) frameworks to ensure efficient price formation and cross-border integration.
- Coupling markets reduce price volatility and maximise renewable and low-carbon assets utilisation across Europe.

Traders

- Facilitate risk management by providing hedges against wholesale electricity price volatility.

- By actively buying and selling electricity products, traders ensure that liquidity is available in all market timeframes so other participants can manage risks effectively.
- Traders monitor market drivers and apply analytics to optimise hedge positions, timing and exposure.

Suppliers (Retailers)

- Act as the link between electricity consumers and the wholesale market: they buy electricity on wholesale markets and sell and supply it to their customers at the agreed price. The retailer therefore bears the risk related to both fluctuations in the electricity procurement price and changes in customer consumption. In a liberalised market, suppliers compete for customers, maximising the value of the supply for the end customers.
- Retail design reflects wholesale signals, dynamic tariffs and demand response should unlock flexibility and lower system costs.
- Consumer benefit: transparent pricing and innovative products empower households to save and support decarbonization.

Customers

- Buy electricity from suppliers, some directly in wholesale markets, increasingly becoming investors and part of the energy market also in generation and trade.
- Demand is becoming more and more integrated in combination with local generation and storage, with better energy management tools and providing demand/supply flexibility, as individuals or collective entities (e.g. energy communities).
- Partnering with suppliers (and other energy service agents) customers become more actively engaged as key actor in the energy market (and as participants of wholesale markets overall).

Regulators (NRAs & ACER) and other relevant authorities (e.g. competition)

- Manage market governance and surveillance, ensuring fair competition, transparency, and consumer protection.
- ACER’s Mandate: Oversees EU-wide market monitoring and cross-border exchanges, enforces REMIT (market integrity), and drives harmonisation of rules.
- Regulators balance affordability with investment signals, avoiding interventions that distort wholesale-retail linkages.

All actors converge on one principle: well-functioning markets are the foundation for affordability, reliability, and sustainability. Each actor, from generators to retailers, plays a role in turning system efficiency into consumer value.

5. What role does an energy supplier play?
Sophie Collet – ENGIE
Monica Immovilli – Edison

What is an energy supplier?
An energy supplier is the customer's contractual partner and everyday interface with Europe's electricity system. They act as the link between energy production and consumption, producing and/or procuring electricity in advance on wholesale markets, hedging risks, and developing commercial offers. They manage contracts, billing, and customer support, while collecting regulated network tariffs, market charges, taxes, and levies on behalf of public authorities. Suppliers must collect and pay these regulated charges regardless of if they receive payment from customers. In some countries, the latter is only possible under the combined billing model.

One of the supplier's core missions is to adapt wholesale market volatility into the products requested by each type of consumer. The supplier enables retail stability, offering a wide range of contract types aligned with consumers' risk appetite and needs. For the residential customers (also referred to as "B2C customers") market, where usage patterns are relatively homogeneous, suppliers typically offer standardised contracts. Fixed-price options or the use of a staggered procurement strategy provides hedging stability over the contract duration, while variable price offers adjust periodically to reflect wholesale market movements. For business and institutional customers (often referred to as "B2B customers"), requirements are heterogeneous and often more complex: large organisations typically use indexed or hybrid pricing, structured hedges, demand-response programs, and Power Purchase Agreements (PPAs) tailored to their risk appetite and load profile. Suppliers therefore design customised offers for this segment by adjusting pricing models, risk management strategies, and the share of sustainable energy supplied according to each customer's objectives.

How Are Suppliers Evolving?
Beyond pricing, suppliers are evolving into service integrators, offering a wide range of additional services - some closely related to the energy sector, such as efficiency solutions, e-mobility, and flexibility programs - and others that go beyond, like home management tools or insurance. This evolution positions suppliers as a "one-stop shop", simplifying life for customers.

Their central role also enables them to support innovative solutions – when suppliers are well informed of such situations - such as self-consumption arrangements and vehicle-to-grid systems, which can benefit customers while enhancing grid flexibility and resilience. In addition, suppliers are embracing digitalisation, providing smart platforms, apps, and online tools that offer real-time consumption insights, personalised offers, and easier contract management.

In short, suppliers act as central facilitators and strategic partners - connecting producers (and sometimes generating energy themselves), networks, consumers, and public authorities, while translating complex market signals into smart, sustainability-oriented services.

6. Compact overview: What is hedging and why is it important?

Beatriz Sánchez-Robles Rute – Endesa
Paul-Erik Vermeulen – RWE

Hedging and Procurement in Electricity Markets

- Electricity spot prices are highly volatile due to fuel costs, carbon pricing, weather, demand-supply changes, and grid constraints. Hedging mitigates this risk by locking in prices, ensuring cost stability and revenue predictability.
- Purpose: reduce exposure to price volatility/swings
- Impact: supports financial planning, protects margins, and enables renewable and low-carbon investment. Overreliance on spot markets is risky.
- Balanced strategies combining forwards, PPAs, and spot procurement are essential.

Key Stakeholders & Benefits

- Generators: secure predictable revenues for operations and project financing.
- Suppliers/Retailers: stabilise wholesale costs for competitive retail offers and ensure compliance with contractual obligations. They cannot sell what they do not own or cannot confidently secure.
- Traders: by actively buying and selling electricity products, traders foster liquidity across all market timeframes, enabling other participants to manage risks effectively.
- Consumers: benefit from stable retail prices and reduced risk premiums.
- System stability: long-term contracts underpin adequacy and renewable and low-carbon assets' integration. Cross-border hedging further shields against regional price volatility.

Procurement Strategies:

- Spot market: flexible but exposes participants to price volatility.
- Forward contracts: bilateral deals for future delivery at a pre-agreed price.
- Futures: similar to forward contracts but standardised and traded on exchanges.
- Power Purchase Agreements (PPAs): Long-term contracts supporting renewables and low-carbon assets and decarbonisation.

Hedging Instruments:

- Forwards: bilateral deals for future settlement at a pre-agreed price.
- Futures: exchange-traded forwards.
- Options: price protection via premiums, like insurance.
- Swaps: exchange fixed vs. floating prices to manage spikes.

Procurement secures supply; hedging manages financial risk, and together they ensure stability and affordability.

Why this is Critical for Market Participants:

- Generators: secure predictable revenues
- Suppliers: avoid exposure to wholesale price spikes and ensure compliance with contractual commitments.
- Consumers: hedging wholesale market costs embedded in retail prices as protection.
- Market: prevents bankruptcies since it ensures a stable cost base even if market prices fluctuate significantly and supports clean energy investment.
  Recent crises highlight the consequences of poor hedging practices.

Example:
A conventional generator needs to purchase fuel to produce electricity. Since fuel prices may rise in the future, the generator uses forward contracts or swaps to fix and stabilise the price today for delivery in the future. This way, if market prices increase, the generator is protected because the fuel cost is already secured. By implementing these hedges, the generator reduces uncertainty about future production costs. Even if market prices change, it knows its cost structure, enabling better planning of margins and electricity sale prices. It will also lock in the electricity price with the electricity customer so both benefit from a stable predictable price.

Overall, hedging is a cornerstone of electricity market stability. It reduces uncertainty, supports investment, and enables the energy transition.

7. What types of contracts can consumers choose from?

Sophie Collet – ENGIE
Rita Alexandra Mota – EDP

In competitive electricity markets, consumers have access to a wide range of contract options designed to balance price stability, flexibility, and sustainability. Choosing the right structure depends on consumers' consumption patterns and preferences, their risk tolerance, additional services required, and the availability of smart meters and digital tools. This diversity is essential: it allows households and businesses to transparently compare offers, select the level of price protection they need, and activate flexibility, green sourcing and other features when it fits their situation.

Some consumers look for more stable and steady fixed prices while others look for prices that better reflect short-term wholesale variations. In between there are numerous possible gradients and combinations being pure energy supply or adding other services and assets fit to consumers. Whenever there is demand for specific price structures and types of contracts, the market responds by providing options to supply.

Whether there is higher demand for some versus others varies across the EU. In the Nordics and a few other European countries (e.g. Netherlands) demand for more variable prices prevail, while in others (e.g. France) demand tilts more towards fixed-price or stable contracts.

Fixed-price contracts provide a predetermined rate for the entire duration of the agreement. This shields consumers from short-term wholesale price spikes, mostly linked to suppliers' long-term procurement and hedging strategies. By contrast, variable price contracts fluctuate with short-term wholesale market trends, offering potential savings when prices fall but exposing consumers to unpredictable price volatility. The rollout of smart meters has enabled more sophisticated contract models. These are time-of-use tariffs, where prices vary by time of day (e.g. different rates for day and night) or season (e.g. different rates for summer and winter) and dynamic tariffs that reflect wholesale market conditions in real-time, incentivising consumers who can shift their consumption to off-peak hours. This way of active engagement provides needed flexibility and relief to the system and electricity grid while rewarding consumers for their ability to adjust their consumption patterns. Another slowly emerging type of contract are hybrid contracts that combine fixed-price rates and variable price rates.

For businesses with diverse consumption profiles, these hybrid offers are increasingly common, as they balance predictability with market opportunities. Some contracts also include reward-based mechanisms, where customers earn incentives for reducing usage during peak periods. Sustainability is another key driver of choice: customers can opt for green tariffs backed by Guarantees of Origin, while companies increasingly sign long-term Power Purchase Agreements (PPAs) to hedge price risks and directly support renewable and low-carbon generation, and ensure predictability of their cost structure ahead (especially where energy plays an important part).

Finally, digitalisation is transforming electricity from a static commodity into a data-driven service. Smart meters and digital platforms enable tailored offers, real-time monitoring, and flexibility incentives, making contracts more adaptive to actual usage patterns and market signals. This evolution empowers consumers to manage costs more effectively and actively participate in the energy transition.

In short: consumers can choose from fixed, variable, time-of-use, dynamic prices, and a wide range of combinations - alongside hybrid, green, and innovative offers - each providing different ways to combine price certainty, flexibility, and sustainability. These options give households and businesses the tools to reduce risks, optimise consumption, and contribute to a cleaner, smarter energy system.

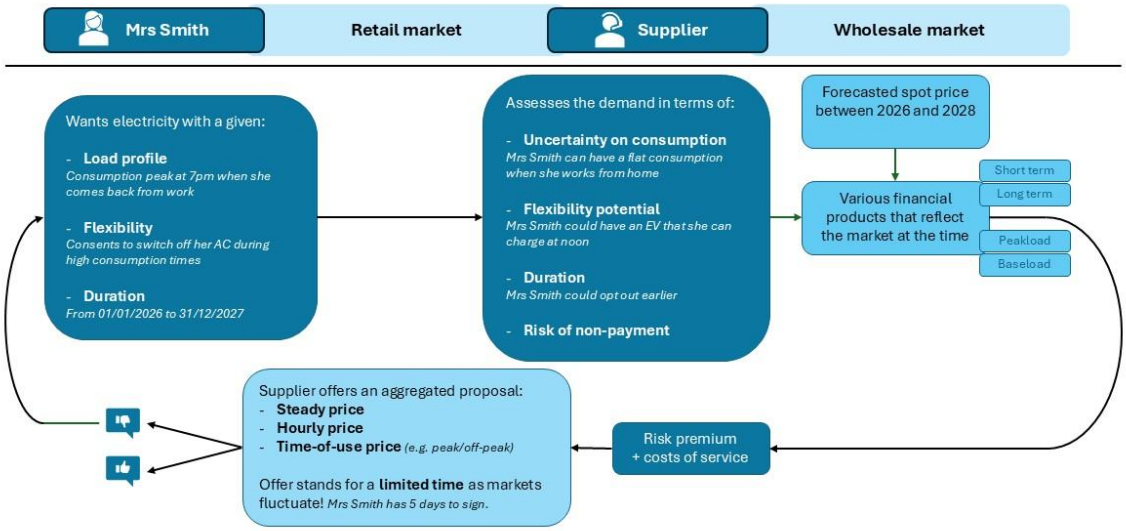
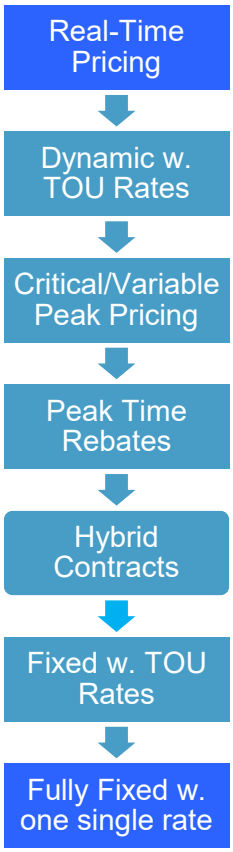


Illustration: the range of contracts choice



8. Why do neighbouring European Member States have different prices?

Monika Kirova – EVN Bulgaria
Vera Karabashlieva – EVN Bulgaria
Paul-Erik Vermeulen – RWE

While some of the retail price components are set by the national legislative and regulatory authorities, others are set by markets as discussed above. Each country has its unique final price composition and shares of each component in it. Taxes and levies vary across countries as they are not harmonised at EU-level. Grid tariffs are based on the costs of network operators for maintaining, upgrading and operating the network which are approved on a regular basis by the National Regulatory Authority in each country.

Energy is traded in the form of short-term standardised products at organised markets – power exchanges or bilaterally as a direct long-term power purchasing contract between a producer and a customer outside an exchange. The largest power exchange in the EU is EPEX SPOT - operating for the region of Central and Western Europe. Nord pool operates for the region of the Nordic and the Baltic states, and the Iberian Peninsula is served by OMIE for Spain and Portugal. The rest of the EU countries have developed their own power exchanges, with each power exchange arriving at its own prices. As a rule, prices in the same bidding zone are the same. Prices across bidding zones may or may not converge.

Although EU wholesale market regulations are uniform, there are considerable price differences (divergence) in the different regions. In some markets at certain times the price of electricity may be four times higher than in others, hence a price divergence is observed. How can this be explained?

The primary reason for this is the incomplete market integration between different bidding zones or the limitation in flows from zones with lower prices to zones with higher prices. If energy flows freely, prices will converge and equalise in the whole EU market, as known from economic theory. This expectation is based on the characteristics of energy as a perfectly substitutable good where the price is the main factor of competition. However, the flow is limited by the available grid capacity of transmission lines (so called interconnectors) between countries and between bidding zones. This is a transaction cost issue in economic terms. When physical capacity is not available, energy cannot flow from areas with lower prices to areas with higher prices or from areas of lower demand to areas of higher demand. In that case prices remain at different levels. Enough physical capacity would, in theory, allow price convergence across bidding zones.

The management of energy flows between countries depends on the transmission system operators' assessment of the technical requirements of each national system. They are also in the position to reserve capacity and not allocate it to cross border trade for security of supply considerations or other technical requirements of the system. This decision impacts prices when energy from lower price bidding zones is not exported to areas of higher prices thus preventing price convergence. More cross border capacity between countries which already have the same prices does not lead to additional price convergence. It is important to overcome bottlenecks between countries or bidding zones with divergent prices to achieve higher economic efficiency. However, this may create a conflicting interest – for the country

with lower price, price convergence would mean a price increase, and so it would be against a move, while for the country with higher prices, price convergence would mean a price decrease, so that country or zone would push for price convergence. In larger markets such as Germany there are also regional difference inside the country, with lower prices in the north and higher prices in the south. At the same time, the neighbouring bidding zone in the north comprising of the Nordic states and the Baltics has much lower prices than the prices in Germany due to their high share of renewable energy in the generation mix. The push from this neighbouring bidding zone is to split the German market into two different bidding zones in order to keep the prices in the north low.

How can we overcome these bottlenecks?
The answer to this issue is the development of infrastructure, however, not just at any cross-border point, but at the border between highly divergent electricity price regions. Investments should be directed in the right place in order to have a maximising economic effect. The target for cross border interconnection in 2030 is 15% of the installed capacity for each Member State. Reaching, even exceeding this target by some countries has not led to price convergence precisely because all the neighbours in the region have roughly the same level of relatively high prices. There is not enough capacity between regions for cheaper energy to be exported and periods of negative prices occur frequently.

There is no doubt that prices depend primarily on the generation mix of each country. The price of each megawatt depends on the fixed and variable costs of the production facilities. As a rule, most expensive are carbon emitting generation facilities as they have both high fixed costs and high variable costs, while RES and low-carbon generation facilities have low variable costs.

Overall, electricity prices differ across borders because the final bill combines three components - energy, network, taxes/levies, and retail costs - each shaped by national fuel mixes, grid regulation, fiscal policy, and retail market design. Even within a country, bidding zones and transmission constraints can create regional price differences.

Other factors contributing to diverging prices:

- Energy mix & wholesale exposure: countries with low-cost renewables or nuclear tend to have lower wholesale prices; gas-heavy systems track volatile fuel and CO_2 costs. Congested interconnectors limit convergence.
- Network costs: grid tariffs vary due to geography, investment cycles, and regulatory methodologies.
- Taxes & levies: VAT rates differ and policy charges vary widely
- Retail market design: regulated tariffs vs market-based contracts affect how quickly wholesale changes reach consumers.

9. Why is a more sustainable, low-carbon energy system cheaper for consumers?

Molnár Eszter – E.ON Hungaria
Rita Alexandra Mota – EDP

A more sustainable energy system reduces external dependency on fuel imports (and therefore the exposure of these fuels price volatility or even the risk of supply interruption), and if paired with tools and assets to combine firm and flexible capacity, it leads to lower prices for the combined wholesale structure.

Here, it's important to explain some nuances between wholesale price differences depending on whether one refers to spot markets (for dispatch optimisation), long to mid-term markets for hedging and to enable investment, or the very near real time tools for system management.

In spot markets, the price set by the less dispatchable renewables (based on marginal cost), such as sun and wind is practically zero; of course these have investment costs to consider. For generation units using renewables, nearly 100% of expenditures occur at the time of installation.

In contrast, fossil-fuel power plants may face relatively lower initial investment burden over their lifecycle, but they add the fuel consumption cost which is continuous and significant.

In between there are other technologies such as hydro with reservoir (especially when combined with PSH), other dispatchable RES or storage (e.g. BESS).

This differing cost structure may - somewhat misleadingly - create the impression that less dispatchable renewable energy is "free" or at negligible cost if looking just to day-ahead markets, since its marginal cost is near zero.

Due to their low variable production cost, renewables typically appear earlier in the merit order, in spot markets, while variable higher-cost units - primarily fossil-fuel plants - are pushed further back and are needed less frequent in any given hour. As a result, the average price of generated electricity may decrease. However, it is also observed that the merit order can change significantly within a single day due to the weather dependence of renewables: if the sun is not shining or the wind is not blowing, the system must still rely on dispatchable firm and flexible capacity, which play an important role for the sake of adequacy and system management, including gas-fired plants.

When renewables are available in large volumes, they reduce the need for fossil fuel capacity, making it less likely that high-cost peakers such as gas or even coal units will determine the price. This exerts downward pressure on wholesale electricity prices and lower electricity prices for consumers.

Renewables, however, need to be combined with firm and flexible assets - such as hydro, storage and to some extent gas – and with resilient grids and interconnections - for the sake of risk mitigation, and respective costs, associated to security of supply and system

management, and to optimise the system with cost-efficient assets in an EU integrated market.

Fast-start power plants, battery and other energy storage systems, and demand side response (DSR) solutions create additional flexibility for the market by enabling the temporal deferral in consumption to better match profiles, to reduce system costs and to better RES integration. While these flexibility services require further investments and may increase system costs in the short term, it is important to distinguish between initial investment needs and long-term operational expenses. For renewables, operational costs are much lower, whereas fossil-based generation continues to incur ongoing and fluctuating fuel costs, subject also to higher geopolitical risk.

In the long run, once substantial renewable capacity and sufficiently large-scale energy storage are available, average electricity prices tend to become sustainably lower. This is particularly beneficial for consumers, as the system becomes less dependent on the volatile prices of fossil fuels that are further influenced by geopolitical developments. As renewables surge, fossil fuel import needs decline, price volatility decreases, and supply security improves. Energy efficiency improvements, digital solutions, and decentralised generation can further reduce consumer costs.

Overall, a more sustainable energy system can become cheaper in the long term by reducing market prices through the merit-order mechanism while being built on a stable structure with low operating costs and much less dependence on fossil fuels. High initial investments may be offset by lower production costs and reduced price risks, offering lasting benefits to consumers.

Finally, when considering increased electrification plus new electricity demand, renewables have much shorter build-out and COD for new capacity, which also enable energy switch for more electricity which, from the effect of energy efficiency, drives lower energy costs with savings in the overall energy bill.

10. How can consumers protect themselves from volatile energy prices?

Sophie Collet – ENGIE
Monica Immovilli – Edison

In competitive markets, energy suppliers offer a wide range of solutions that help customers mitigate exposure to price volatility. The most common option are fixed-price contracts, where customers benefit from a predetermined price for the entire contract duration. This price typically reflects long-term procurement risks and the hedging strategies adopted by suppliers, shielding customers from sudden price spikes.

Beyond fixed-price contracts, consumers have several complementary levers. Competitive markets provide innovative ways to reduce exposure to volatility, including:

- Energy efficiency measures and sobriety - such as better insulation, efficient heating and cooling systems, smart thermostats, permanently reduce consumption.

- Hybrid and innovative offers combining fixed and variable rates, reward-based schemes that incentivise reduced usage during peak hours, and advanced models leveraging PPAs and Virtual Power Plants (VPPs), transferring the benefits of long-term procurement and system optimisation to end users.
- Self-generation and storage: for those able to invest, rooftop solar - ideally paired with home battery storage - adds a strong buffer against market volatility. Solar reduces purchases from the grid during daylight, while storage shifts surplus into evening peaks when prices tend to be higher. Over time, this combination lowers average unit costs and increases resilience.
- Suppliers may also provide financial support to make the technologies above available to customers with lower investment capacity.
- Flexibility services, enabling customers to shift usage to off-peak hours when prices are lower, often supported by smart meters and automated tools. Enabled by smart meters and suitable tariffs, demand response allows consumers to shift usage to off-peak hours (for example, charging EVs overnight, pre-heating or pre-cooling at low-price times).

These options empower consumers to better manage costs, reduce exposure to market volatility, and actively contribute to the energy transition.

11. What can EU Member States do to help reducing the price of electricity bills?

Manel Martínez Benítez – Endesa
Monica Immovilli – Edison

The main components of the electricity bill are the supply price, which includes the energy and supply cost and network cost, and taxes and levies, such as VAT, excise taxes, and other charges. These are either explicitly included or built into the price and help fund public policies like supporting renewable and low-carbon energy development or funding vulnerable customers support, or cover costs not directly related to the electricity supply.

To reduce the price of the bill in a sustainable way, Member States need to design strategies tailored to each component of the bill, aligned with today's end-use electrification and decarbonisation objectives.

Member States can reduce electricity prices quickly and effectively by acting on the taxes included in the bill and on the activities involved in electricity supply.

Taxes and levies that are not related to electricity supply or that finance public policy costs - and which penalise the competitiveness of electricity - should be removed. These charges may appear explicitly on the bill, or they may be embedded in the electricity price, such as the tax on the value of production and the so-called environmental levies (hydropower, nuclear waste tax, wind generator poles, etc.) in Spain.

In some countries, taxes on electricity are higher than those applied to fossil fuels, while in others, electricity consumers bear most of the costs associated with decarbonisation. This

penalises the use of electricity and creates a barrier to electrification, affecting the overall amount of consumption and system revenues.

By contrast, reducing the network costs included in the bill requires a different approach. Given that network costs are mostly fixed, promoting and accelerating electrification will help generate additional revenue to cover these costs more quickly. This will allow network charges to decrease for all consumers.

To achieve this, it is essential to establish an appropriate remuneration framework that incentivises the necessary significant investments to expand the grid and connect new users. This framework should also encourage investment in digitalisation, grid modernisation, smart metering, and improved interconnections, all of which will help reduce network costs. In addition, reducing administrative burdens can speed up the process of connecting to the grid.

On the other hand, ensuring affordable and resilient retail prices requires structural measures that promote long-term competitiveness. For instance, promoting competition on a liberalised market pushes suppliers to develop more competitive and innovative offers with the aim to increase their attractiveness for consumers. Therefore, competition on prices, leading to lower prices, is a relevant and direct consequence. However, competition alone does not guarantee lower retail prices as wholesale prices are primarily driven by the underlying generation mix and system costs. Although interventions in retail prices might seem to mitigate price increase for consumers in the short-term, in the long-term their distortive effects can disrupt competition, undermining the financial sustainability of some suppliers.

Promoting the integration of renewables and low carbon assets and new electricity users, as storage, can also help to lower wholesale prices. Transforming consumers in prosumers and allowing them to become active players can also impact on the demand-supply balance, allowing to reduce the wholesale and the flexibility price.

On the other hand, regulatory uncertainty and continuous changes in regulation should be limited, as well as the introduction of additional burden for suppliers to comply.

12. Does EU legislation correctly define roles and responsibilities for new actors regarding consumer protection?

Paul-Erik Vermeulen – RWE
Molnár Eszter – E.ON Hungaria

- EU legislation (primarily the Electricity Market Directive and the Renewable Energy Directive) has established the legal foundations for recognising new market participants (aggregators, energy communities, renewables self-consumers) and enabling their market entry. The Directive dedicates an entire chapter to the rules on consumer empowerment and protection.
- Consumer-protection objectives and principles (full transparency regarding contractual terms, non-discriminatory and transparent rules and procedures, equal and non-discriminatory terms) have been incorporated into energy-market regulations.

- Due to the legal form of the Directive, the regulatory framework is essentially a set of minimum requirements, meaning that the actual effectiveness of consumer protection largely depends on the quality of national implementing rules and their enforcement. For example, with regard to renewable energy communities, the Directive assigns to Member States the task of creating a supportive regulatory environment that ensures fair, proportionate and transparent procedures, as well as cost-reflective network charges, levies and taxes. In practice, this means that the level of consumer protection can differ significantly across Member States, depending on how these principles are translated into concrete rules, tariffs and administrative processes.
- The level of consumer awareness related to the operation of energy communities varies across Member States, therefore, additional initiatives can be undertaken at both EU and national level to further enhance awareness.
- The annex on minimum billing requirements in the Directive is a useful consumer protection safeguard for traditional market actors, but it provides little clarity on how these obligations apply to new actors.

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