



Danish Energy Agency

Danish electricity market implementation plan according to Article 20 of Regulation (EU) 2019/943 on the internal market for electricity

September 2025

Danish Energy Agency

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1. Introduction

According to article 20 of Regulation (EU) 2019/943 on the internal market for electricity (“the Electricity Market Regulation”), Member States shall monitor resource adequacy within their territory based on the European resource adequacy assessment (“ERAA”), which may be complemented by national resource adequacy assessments (“NRAA”) in line with article 24 of the Electricity Market Regulation.

Where the ERAA or NRAA identifies a resource adequacy concern, the Member State concerned shall identify any regulatory distortions or market failures that caused or contributed to the emergence of the concern. Where the Member State intends to introduce a capacity mechanism to address resource capacity concerns, it is obliged to develop and publish an implementation plan with a timeline for adopting measures to eliminate any identified regulatory distortions or market failures as a part of the State aid process. In that context, the European Commission reviews the implementation plan and issues an opinion on whether the measures identified in the implementation plan are sufficient to eliminate the identified regulatory distortions or market failures. Member States are obliged to monitor the application of their implementation plans and publish annual monitoring reports. These monitoring reports are subject to review by the European Commission, which issues an opinion.

In recent years, resource adequacy has become a concern for Denmark, as both national studies¹ and ERAA2024 indicate reductions in resource adequacy over the coming years.

Reductions in resource availability are partially due to the fact that a significant part of the adjustable electricity capacity in Denmark and abroad from, inter alia, biomass, coal and gas power plants is expected to close in the coming years. Historically, those power plants have helped to ensure the security of electricity supply, but for many of them it is no longer profitable to continue operation. Increasing shares of electricity production will in the future come from solar cells and wind turbines, which are cheaper sources of electricity, but also weather dependent and thus not fully adjustable. In addition, electricity consumption is expected to increase significantly in the years to come, due to rising numbers of, for example, heat pumps, electric vehicles, data centres, PtX and electrification in industry. The impacts of the broader energy transition across sectors and of the deployment of new technology, such as hydrogen-based production, large-scale flexibility from electrolysis and other demand-side response as well as from storage, are important factors that contribute to uncertainty. Uncertainty at the national level is further exacerbated by uncertainties regarding neighbouring countries’ trajectories towards a future energy system.

¹ See for example the Danish TSOs, Energinet, 2024 report on security of supply in the following link [Redegørelse for elforsyningssikkerhed](#) (in Danish), notably annex 2.2. As another example see the 2023 analysis by the independent Danish Climate Council in the following link [Sikker elforsyning med sol og vind](#) (in Danish). The Danish Climate Council is an independent expert advisory panel, set up under the Danish Climate Act.



Given the concern about reduced resource adequacy, the Danish Ministry for Climate, Energy and Utilities has begun to analyse options for the possible introduction of a capacity mechanism in Denmark. As part of this work, this implementation plan has been prepared in line with the requirements of the Electricity Market Regulation.

Chapter 2 of this report gives an overview over the broader Danish policy context and chapter 3 a description of the main features of Denmark's electricity system. Chapter 4 briefly recaps current analysis regarding resource adequacy in Denmark, and chapter 5 describes the status of market reform in Denmark, including measures taken to eliminate regulatory distortions or market failures. Throughout the subsections of this chapter, issues where further work will need to be done are identified. Chapter 6 contains a summary of these further market reform measures and contains a schedule for their implementation. The answers of the Danish government to the questions contained in the European Commission's guidance document on implementation plans are summarised in the Appendix to this report, with reference to the main body of the report where relevant.

2. Policy context

Denmark has historically been at the forefront in terms of strengthening the electricity market, in close cooperation with our Nordic neighbours. Early liberalisation and structural and market reforms are factors that made Denmark an early leader in the integration of renewables into its energy system and in supporting the green transition. This is largely due to a continuous political commitment backed up by legislative reform.

Thus, Denmark is on a path towards an electricity system where there is an ambition to cover 100 pct. of electricity demand by renewable energy in 2030, and a commitment to reduce greenhouse gas emissions by 70 pct. in 2030 from 1990 levels. The 70 pct. reduction commitment is enshrined in the Danish Climate Act. Furthermore, the current government is committed to achieve an objective of a 110 pct. reduction in 2050, compared to 1990.

Successive political agreements over time have supported the expansion of onshore wind power and solar PV, by now predominantly feasible without subsidies and market-driven.

A recent political agreement from May 2025 foresees the tendering of an additional 3 GW offshore wind power in 3 locations. The agreement includes the possibility of financial support in the form of a 2-sided capability-based Contract for Difference. Thus, the agreement adjusts earlier ambitions in a political agreement from 2023 of establishing 6 GW offshore wind without support by 2029/2030.

The implementation of the "Energy Island Bornholm"-project, the establishment of which was also agreed politically in 2023 and which foresaw a further 3 GW of offshore wind by 2030, is awaiting further discussions with Germany, and Danish political process.

Current offshore production capacity is about 2.7 GW, which will increase by 1 GW in 2027, when a further major offshore windfarm is expected to become operational.



A PtX-strategy was politically agreed in 2022. The strategy includes an objective for the development of 4-6 GW electrolysis capacity by 2030, to the largest extent possible on market terms. Amongst others, the political agreement includes the introduction of measures incentivizing the co-siting of PtX-facilities with production, making use of the flexibility potential of PtX and reducing the need for grid extension.

Regarding carbon capture, transport and storage, several political agreements have been concluded since 2020 in order to secure a market-based development of CCS in Denmark in the long term. As part of these agreements, 38 bn. DKK have been set aside for supporting CCS, which is estimated to result in 3.2 mio ton annual CO₂ reductions in 2030.

A number of other agreements and initiatives support increased electrification across a broad range of sectors and actors, accounting for rising demands for electricity in the decades to come.

Amongst those is a political agreement of December 2024 on a speedier and more effective development of the electricity grid, including implementation of renewable acceleration areas as foreseen in the Renewables Energy Directive. Furthermore, the political agreement from May 2025 regarding additional 3 GW offshore wind also foresees a political discussion of measures that support electrification in Denmark, including efforts to promote storage.

3. Brief description of the Danish electricity system

The following sections provide an overview of the Danish electricity sector, recent trends and future projections of production, consumption, and transmission patterns.

3.1. Production

Denmark's path towards a renewable electricity system has resulted in an electricity mix that today consists primarily of renewable generation.

Electricity production based on renewables accounts for 82.1 pct. of all electricity produced in 2023. Wind power contributed with 53.8 pct., biomass with 16.4 pct., solar with 9.6 pct. and biogas with the remaining 2.5 pct. The expansion of renewables like wind and solar has mainly suppressed production based on fossil fuels, which only supply just above 10 pct. of the produced electricity today, see *figure 1*.

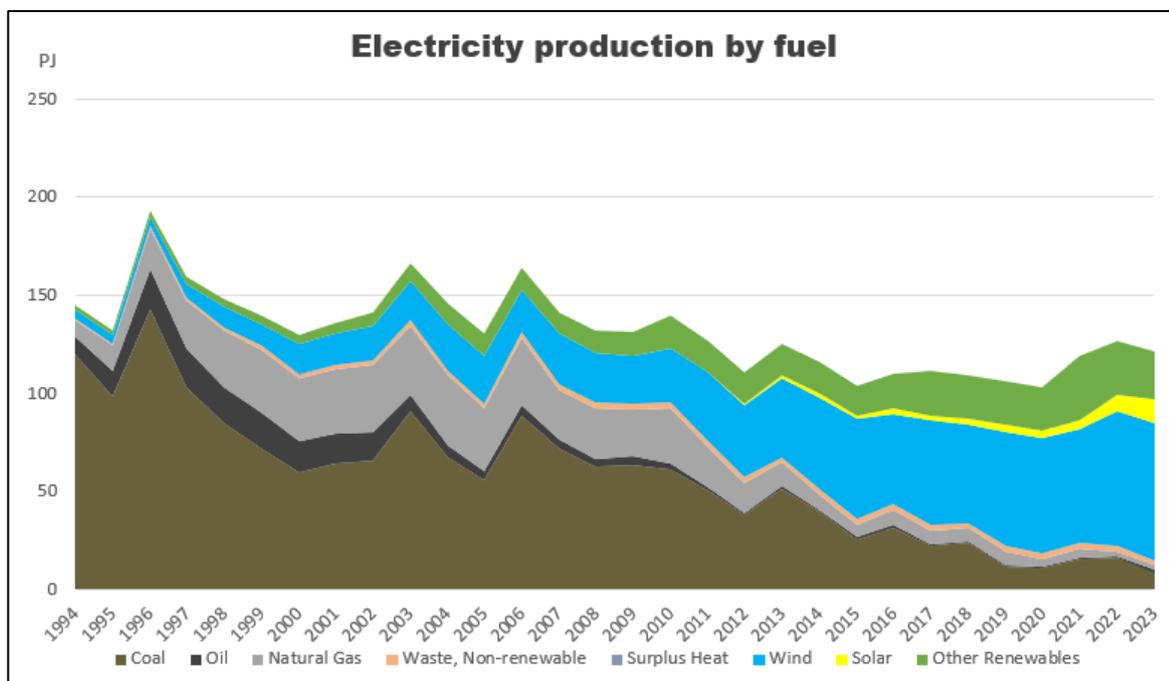


Figure 1: Electricity production by fuel 1994-2023 - Source: 2023 Energy Statistics, Danish Energy Agency²

At the same time, there has been a continuous decline of adjustable production capacity, primarily due to the exit of large-scale power plants.

Thus, *figure 2* shows the transition away - in terms of installed capacity - from adjustable production capacity, consisting predominantly of fossil fuel-based large central power plants as well as smaller decentralised power plants with a mix of fuels (primarily gas), towards weather dependent and non-adjustable production capacity based on wind and solar.

While large central power plants made up the main share of installed capacity up to the early 1990s, the share of decentralised power units and autoproducers³ rose steadily during that period. However, taken together, the share of adjustable capacity has now diminished to around 40 pct., with wind and solar accounting for around 60 pct. of total installed production capacity.

² See [2023 Energy Statistics](#) (in Danish).

³ Producers where electricity production is not the main activity.

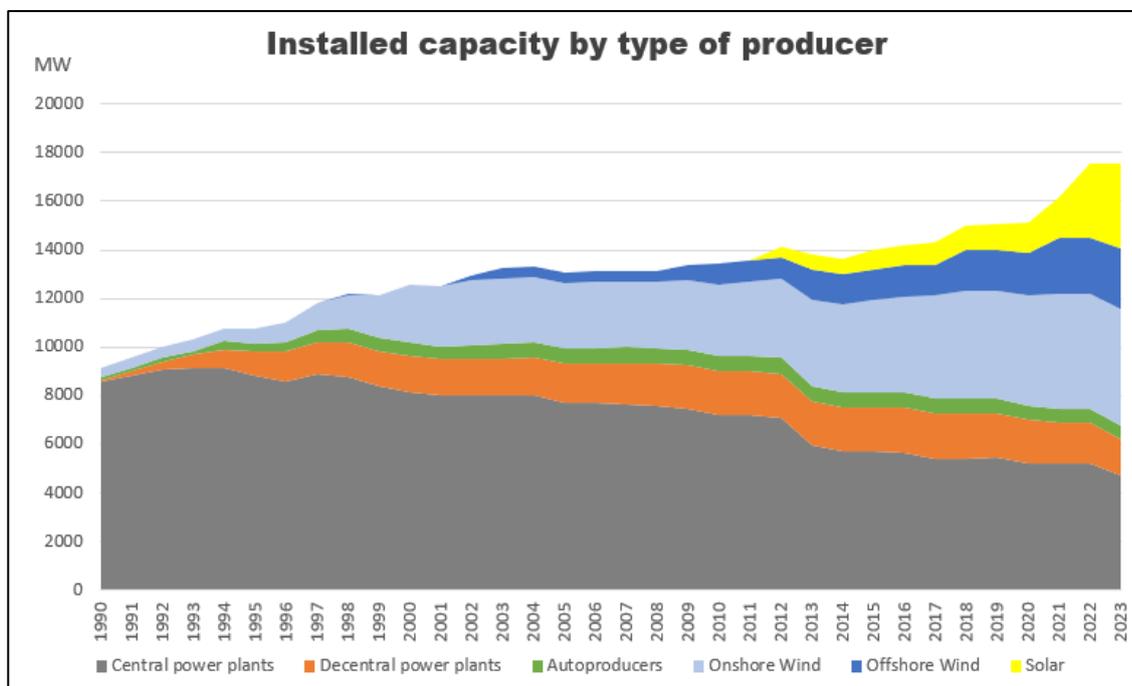


Figure 2: Installed capacity by type of producer 1990-2023 - Source: 2023 Energy Statistics, Danish Energy Agency⁴

Based on the yearly analytical assumptions developed for the Danish energy and gas sector by the Danish Energy Agency⁵ (“analytical assumptions”⁶), it is expected that adjustable production capacity will further decline in the years to come.

Thus, as can be seen in *figure 3*, the Danish Energy Agency foresees a further decrease in adjustable capacity by 50 pct. from today’s approximately 5,000 MW to around 2,500 MW by the mid-2030s. This decrease is primarily forecasted to happen in the Western Danish bidding zone DK1⁷.

⁴ See link in fn. 2.

⁵ The Danish Energy Agency is an Agency under the Ministry for Climate, Energy and Utilities.

⁶ The current report is based on the hearing version of the analytical assumptions for 2025, see [2025 Analyseforudsætninger](#) (in Danish). Please note that the finalised 2025 Analytical Assumptions are expected to be available in November 2025. The finalised version will be accessible via the same link.

⁷ Denmark is currently divided in 2 bidding zones, DK1 (West Denmark) and DK2 (East Denmark).

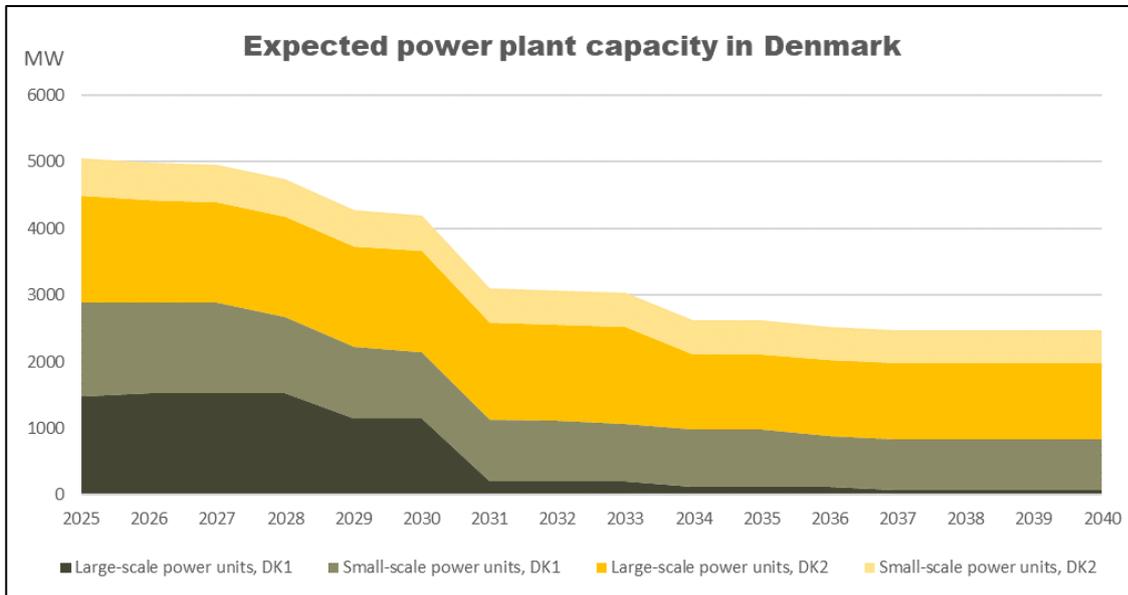


Figure 3: Future expected power plant capacity in Denmark – Source: Hearing version of the 2025 Analytical Assumptions, Danish Energy Agency⁸

At the same time as adjustable capacity is expected to decrease due to market exits in the near future, a significant buildout of both offshore wind and solar capacity is expected in the period up to 2050, see figure 4. Projections show that the installed production capacity is expected to increase almost fivefold, with solar and offshore wind capacity constituting nearly 90 pct. of installed capacity in 2050.

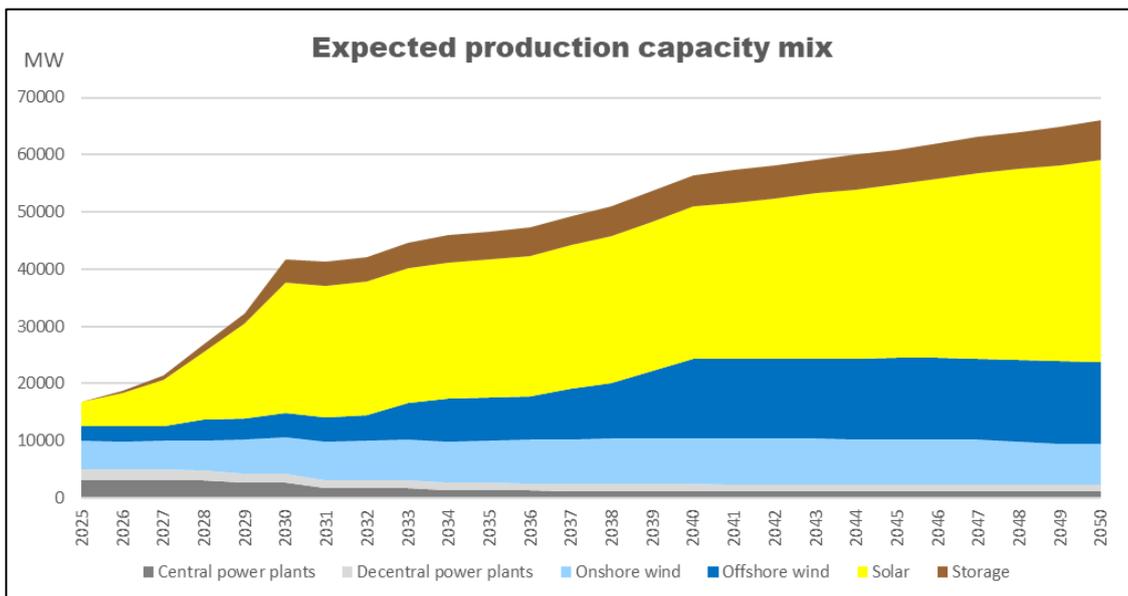


Figure 4: Future expected production capacity mix - Source: Hearing version of the 2025 Analytical assumptions, Danish Energy Agency⁹

⁸ See fn.6.

⁹ See fn. 6.



The continuous push for renewable energy integration has resulted in a downward pressure on electricity prices, reflecting functioning markets, but thereby also lowering the potential income of market-based adjustable capacity and RES-production alike. It is also expected that, in the future, thermal plants will have to recover their capital expenditures during a diminishing number of hours, thereby increasing investment risk and risk premium. The developments in prices combined with regulatory risks in terms of future tenders for renewables, technical price caps according to EU-regulation, and the establishment of capacity mechanisms in surrounding countries, add up to a presumably challenging investment environment, underpinning the expectation of further reductions in adjustable capacity. It should also be noted that increasing investment in storage, PtX (see also the section below) and flexible consumption technologies, will make it possible for RES-production to increasingly contribute with adjustable capacity and storage technologies will thus contribute to the profitability of market-based RES-production.

3.2. Consumption

Table 1 shows the average and peak load from 2018 to 2024 for DK1, DK2 and both bidding zones combined. The Danish electricity consumption has been increasing at a steady pace across recent years, with DK1 consumption averaging around 2,300-2,600 MW and DK2 consumption averaging around 1,500-1,600 MW. Peak load has ranged from around 5,700 MW in total in 2018-2019 up to 6,400 MW in 2021.

MW per year	2018	2019	2020	2021	2022	2023	2024
Average load - DK1	2,315	2,326	2,414	2,576	2,425	2,411	2,571
Average load - DK2	1,519	1,504	1,470	1,567	1,494	1,525	1,615
Peak load - DK1	3,602	3,416	3,571	4,115	3,535	3,585	3,767
Peak load - DK2	2,520	2,353	2,276	2,451	2,329	2,584	2,512
Average load - Total	3,833	3,823	3,883	4,143	3,919	3,936	4,186
Peak load - Total	5,679	5,689	5,811	6,393	5,834	6,118	6,251

Table 1: Consumption pattern for 2018-2024 - Source: Energi data service, Energinet¹⁰

However, this rather stable development is expected to accelerate in the coming decades. Figure 5 visualises the expected growth in consumption towards 2050. Thus, the next decades are expected to see a large build-out of especially PtX, which in turn will require a large expansion of the current production capacity. At the same time it is expected that there will be a rising demand from data centres, as well as from the general electrification of

¹⁰ See [Energi Data Service](#).



society resulting in a rising electricity demand from electric vehicles as well as smaller or larger heat pumps and from carbon capture (from carbon sources and direct air capture).

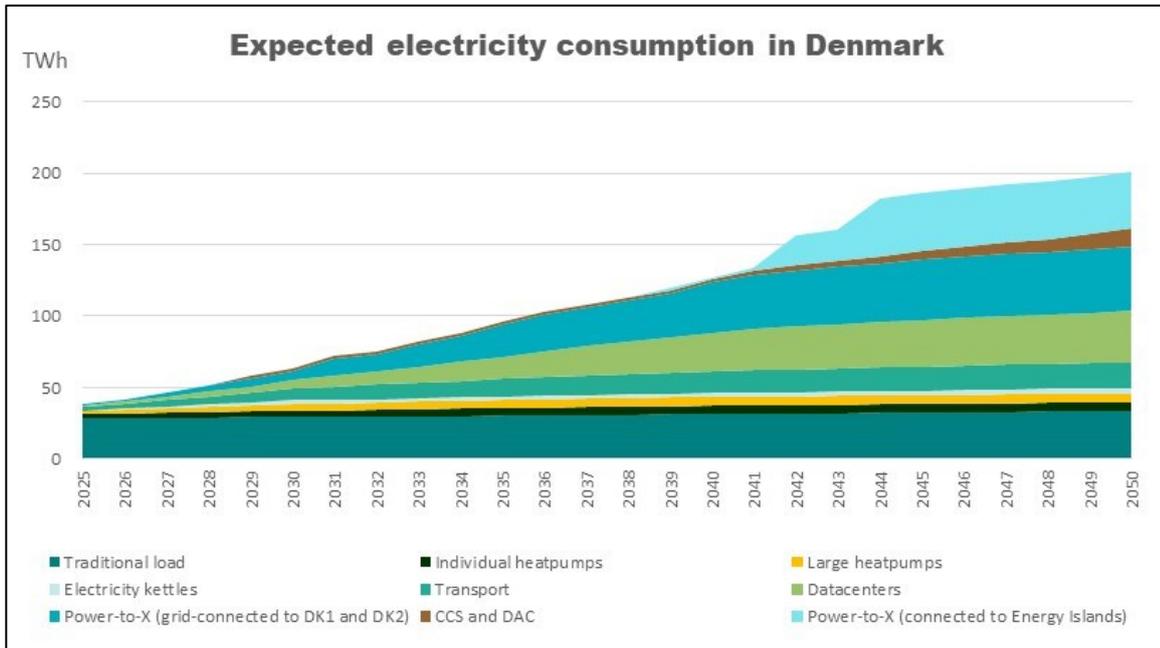
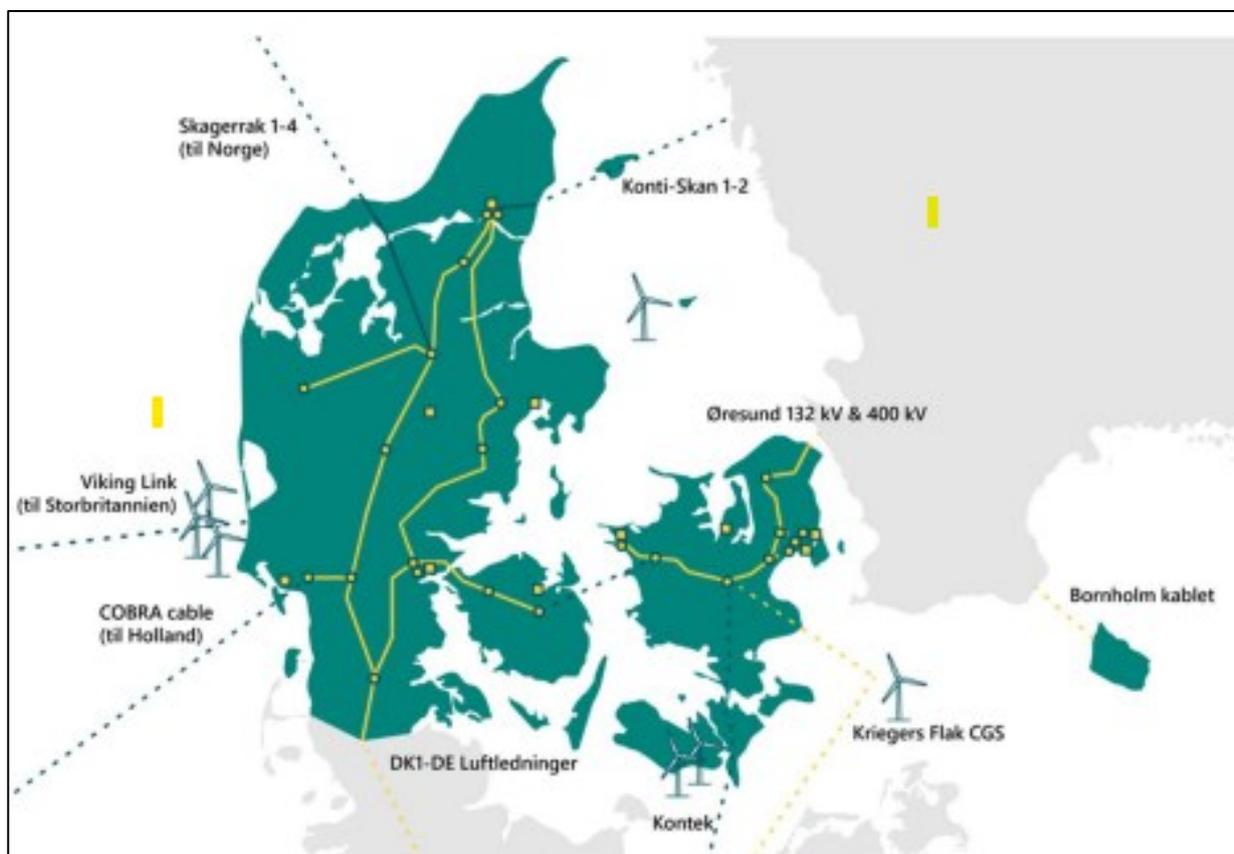


Figure 5: Expected electricity consumption in Denmark - Source: Hearing version of the 2025 Analytical assumptions, Danish Energy Agency¹¹

3.3. Interconnection

Denmark is highly interconnected with its neighbouring countries with interconnectors to Germany, Sweden, Norway, the Netherlands as well as the UK through Viking Link established in 2023. Furthermore, there is a HVDC link between the two Danish bidding zones DK1 and DK2.

¹¹ See fn. 6.



Source: Energinet

Since the 1990's, Denmark has been both net exporter and importer of electricity on an annual basis. However, in the past decade Denmark has been a net electricity importer, with Norway and Sweden being the primary exporters to Denmark. This is mainly because Denmark serves as a transit hub for cheaper electricity from the Nordic hydro plants that flows to Germany and Central Europe. The net export development in Denmark is visualised in *figure 6*.

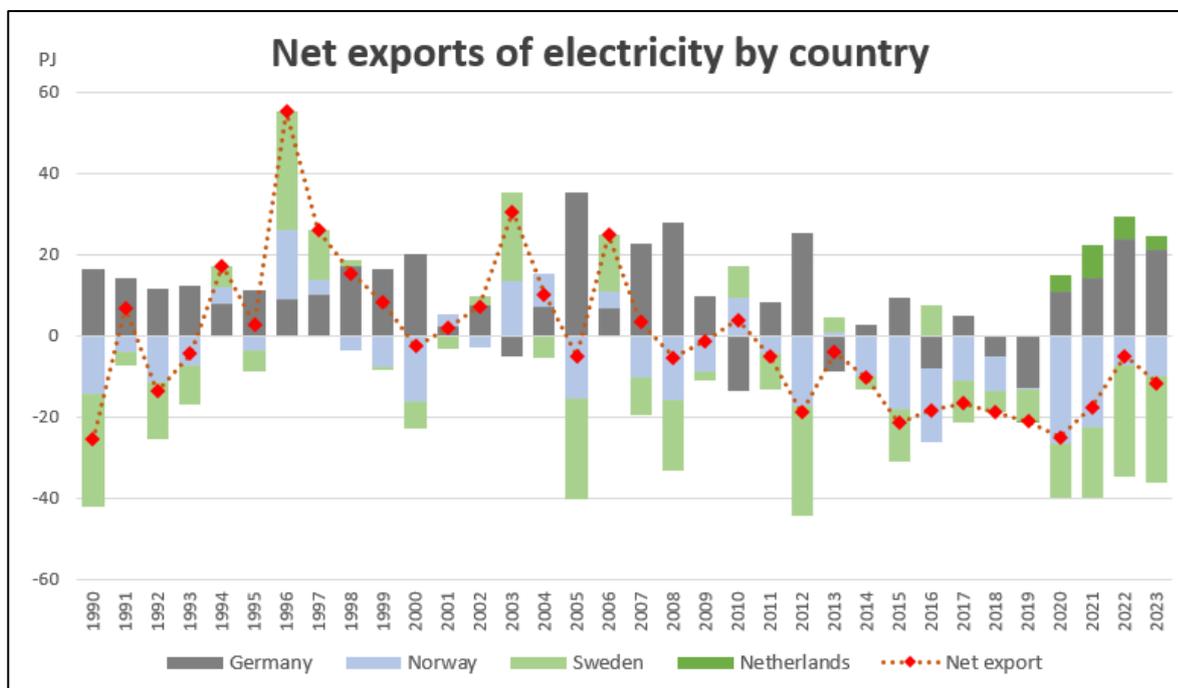


Figure 6: Net exports of electricity by country - Source: Energy Statistics 2023 (Energistatistik), Danish Energy Agency¹²

4. Security of supply and resource adequacy

In Denmark, the overall responsibility for electricity security of supply lies with the minister for climate, energy and utilities. Each year, the minister determines a planning target level of security of supply 10 years ahead in time. The target level is based on an annual national resource adequacy assessment on security of supply in the electricity sector prepared by Energinet¹³. Energinet's assessment includes a recommendation for the target level of security of supply. Both the report and the recommendation support the minister's determination of the planning target level for security of supply.

The security of supply target level comprises outages due to both grid failures, unplanned outages and resource adequacy shortages. The target level has the character of an overall planning objective comprising all aspects of security of supply, considering both adequacy, balancing reserve, dynamic stability and IT-security, but is not linked to or accompanied by measures on how to achieve it.

In a historical perspective, Denmark has had a very high security of supply in the electricity sector. Supply disruptions that have occurred in the past have been due to grid failures and

¹² See fn. 2.

¹³ Energinet is the sole transmissions system operator (TSO) in Denmark.



unplanned outages, for example due to digging accidents or substation fires, rather than lack of adequacy.

The absence of adequacy failures so far is due to the continued presence, up to now, of a number of large thermal power plants and a substantial number of combined heat and power plants, providing adjustable capacity, alongside the deployment of large amounts of wind power and, increasingly, solar power. In addition, Denmark's high level of interconnectivity has been an important factor in maintaining a stable adequacy situation in all-weather seasons and under all conditions. In addition, the internal Danish transmission grid has continuously been reinforced as needed, thus ensuring sufficient transmission capacity. Furthermore, Denmark has been on the forefront of market liberalisation, both at the day-ahead stage but also in balancing markets. The market infrastructure that is in place enables and encourages market participation. Denmark operates with two separate bidding zones and is prepared to implement offshore bidding zones as needed. As an important prerequisite for demand response, there is a 100 pct. rollout of smart meters. Thus, Denmark has continuously focused on the development of efficient energy-only markets, fostering competition and lowering entry barriers for new market participants.

However, Denmark expects to face a more challenging resource adequacy situation in the future, starting around the late 2020's. As in many other countries, this is partly due to the decommissioning of thermal power plants as well as increased consumption. Combined with an increasing share of variable renewables such as wind and solar, the electricity system is facing an increasing challenge with maintaining resource adequacy in the near future. With parallel developments expected in neighbouring countries, it will not always be possible to rely on electricity imports when experiencing a national production deficit.

This is underlined by the most recent ERAA available, approved by ACER, ERAA2024, and Energinets annual report on security of supply of 2024, which show that low output from non-adjustable renewable energy sources and an unavailability of adjustable capacity are the main drivers for scarcity situations, and that these scarcity situations to an increasing extent will occur simultaneously in Denmark and surrounding countries. For instance, Energinet's 2024 report shows, that in hours with load loss in Denmark, there is a probability of around 90 percent, that load loss occurs in Germany as well.

LOLE levels according to ERAA2024 for the Danish bidding zones are summarised in *table 2*. The findings by ENTSO-E show considerable resource adequacy concerns already from 2026.

LOLE-values	Bidding Zone	2026	2028	2030	2035
ERAA2024 central	DK1	10.6	18.8	10.0	10.3
	DK2	10.3	21.0	13.3	12.3

Table 2: LOLE values based on ERAA 2024



The Danish Energy Agency has carried out an initial analysis in 2021 estimating a value of lost load for Denmark pursuant to article 11 of the electricity market regulation and based on the ACER approved methodology of 2020 for the calculation of the value of lost load (VoLL), the cost of new entry (CONE) and the reliability standard. The analysis resulted in a VoLL of 174 DKK/kWh (23.32 EUR/kWh)¹⁴. In 2024/2025, a new analysis was carried out by the Danish Energy Agency, which resulted in a slightly higher VoLL of 176 DKK/kWh¹⁵. In 2024, the Danish Energy Agency also determined a CONE for Denmark following the above-mentioned methodology, which was slightly amended in June 2025¹⁶. On the basis of the 2021-VoLL and the CONE-report published by the Danish Energy Agency, the Danish Utility Regulator, which is the regulatory authority in Denmark, had been asked to forward a proposal for a reliability standard pursuant to article 25(2) of the electricity market regulation. In May 2025, the Danish Utility Regulator proposed to set the reliability standard at 1.51 LOLE¹⁷. Given that the reliability standard proposal received by the Danish Utility Regulator was based on the 2021 VoLL estimate, and that an updated VoLL estimate was calculated in 2025, a request for an updated proposal has been sent to the Danish Utility Regulator in June 2025. Following an updated proposal by the Danish Utility Regulator, the Minister for Climate, Energy and Supply will set the Reliability Standard.

5. Status of market reform in Denmark

The energy trilemma of advancing a green transition while ensuring security of supply and affordable prices is the crucial landmark for Danish energy policy. Ensuring well-functioning, undistorted energy markets as well as forward-looking and future-proof legislation and regulation, including the implementation of EU legislation for the energy sector, and close cooperation with its Nordic and EU-neighbours lie at the center of Denmark's strategy for navigating the trilemma.

This chapter describes the functioning of the Danish electricity market and considers possible regulatory distortions and market failures as well as other shortcomings within the five overall sections identified in the European Commission's guidance on Member States' implementation plans: wholesale markets, balancing markets, demand-side response, retail markets (with a focus on regulated prices) and interconnection. In addition, this chapter includes a section on self-generation, energy storage and energy efficiency, given that article 20(3) of the Electricity Regulation specifically mentions the need to consider these activities.

5.1. Wholesale markets

5.1.1. Overview of Danish wholesale markets

A core element of a well-functioning electricity market is an efficient wholesale market that ensures competition and transparency. Both spot markets, where electricity is bought and sold on a short-term basis, and futures markets that provide tools for hedging against price

¹⁴ Accessible (in Danish) via the following [Link to 2021 VoLL report, see bottom of webpage.](#)

¹⁵ Accessible (in Danish) via the following [Link to 2025 VoLL report.](#)

¹⁶ Accessible via the following [Link to CONE report.](#)

¹⁷ See [DUR - Proposal for a Reliability Standard \(VoLL 2021\)](#) (in Danish).



risks, contribute to market stability. High liquidity in these markets enhances trading opportunities, allowing participants to diversify their transactions across different partners, products, and trading platforms. Power exchanges offer structured and reliable marketplaces while also providing critical price signals to the wider electricity sector.

Denmark has consistently supported the integration of European electricity markets, recognizing that cross-border electricity trade enhances security of supply and optimises the use of resources. By leveraging regional synergies between production and consumption, electricity systems across Europe can become more flexible and resilient. This integration also helps reduce the overall cost of electricity generation by allowing capacity to be shared more efficiently across borders.

The Danish market design is a result of close cooperation and coordination with the other Nordic countries since the early 1990s, when early liberalisation efforts in those countries led to the establishment of a common Nordic electricity market. Since then the Danish approach has been characterised by a strong commitment to develop the common Nordic electricity market, where possible through the joint implementation of common EU rules regarding electricity wholesale markets. Both at the EU, Nordic and national levels, an important objective for Denmark in the past many years has been to adapt the market design in accordance with the needs arising from the green transition and large-scale deployment of renewable generation. There is a continuous strong commitment to further develop the market design, staying at the forefront of the technological development, including for the digitalisation of markets.

Figure 7 visualises the overall market design for the Danish electricity wholesale market, which is organised as a competitive energy-only market with two bidding zones (DK1 and DK2), reflecting the structural congestion between the geographically separate areas of Eastern and Western Denmark, operating at separate frequencies.

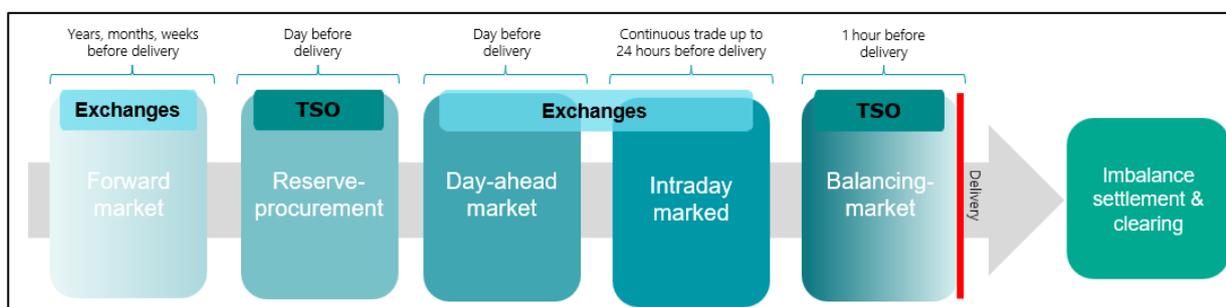


Figure 7: Danish wholesale market visualised - Source: Danish Energy Agency

5.1.2. Day-ahead and intraday markets

The majority of electricity traded in Denmark is traded either on the single pan-European cross zonal day-ahead electricity market (SDAC) or the single pan-European cross zonal intraday electricity intraday market (SIDC). Denmark considers these markets to be well-functioning, sending the right price signals and being open for all technologies to participate.



In Denmark NordPool and EPEX operate as the designated nominated electricity market operators (NEMOs) under the 2020 Nordic multi-NEMO arrangement, offering both day-ahead and intraday trading.

No national restrictions apply on generators' ability to freely price their offers in the wholesale market, besides being bound by relevant EU- legislation and requirements based on EU- legislation.

Thus, generally speaking, electricity producers' offers have to comply with obligations under Regulation (EU) 1227/2011 on wholesale energy market integrity and transparency (REMIT).

More specifically, there are no national price caps or administrative bidding limits in place, so as to ensure that price formation accurately reflects market conditions. The only pricing restrictions applicable are the harmonised technical price limits applied in the day-ahead and intraday markets by the NEMOs, in line with article 10 of the Electricity Market Regulation.

Accordingly, offers on the day-ahead and intraday markets have to be compliant with the price limits mentioned below. In line with article 10 of the Electricity Market Regulation (EU) 2019/943, the technical bid caps in the day-ahead market and the intraday market are automatically adjusted when they are expected to be reached. This approach ensures free price formation within the regulatory framework for the internal market for electricity, incentivising investment in generation and flexibility solutions, where they are needed most.

Day-ahead price limits:

For single day-ahead coupling (SDAC), the harmonised price limits are between a minimum price of -500.00 EUR/MWh and a maximum price of 4,000.00 EUR/MWh (as of March 2024). Decision No 01/2023 of ACER of 10 January 2023 on the Nominated Electricity Market Operators' proposal for the harmonised maximum and minimum clearing price methodology for the single day-ahead coupling regulates any future changes to the day-ahead price limits, and will thus, where relevant, also be implemented in the Danish market.

Intra-day price limits:

For single intraday coupling (SIDC), harmonised price limits are set between -9,999.99 EUR/MWh and 9,999.99 EUR/MWh. Decision No 02/2023 of ACER of 10 January 2023 on the Nominated Electricity Market Operators' proposal for the harmonised maximum and minimum clearing price methodology for the single intraday coupling states that if the harmonised maximum clearing price for SDAC is increased above the harmonised maximum clearing price for SIDC, the harmonised maximum clearing price for SIDC shall be increased to be equal to the harmonised maximum clearing price for SDAC. Relevant changes will thus be implemented for the Danish market.

Finally, there are no rules or provisions in place in Denmark that would require Energinet to release generation reserves to the market, when market prices rise above certain thresholds.



5.1.3. Forward markets

Given the volatility of day-ahead prices, financial contracts traded in the forward market help stabilise prices and enhance investment security for both consumers and producers.

For effective hedging, the forward market must have sufficient liquidity, meaning a strong presence of both buyers and sellers. In Europe, regulators evaluate market liquidity and hedging opportunities, and if deemed insufficient, TSOs may be required to intervene—often by implementing long-term transmission rights (LTTRs) to improve liquidity in specific market areas.

As with other market regulation, Denmark is bound by Commission regulation (EU) 2016/1719 establishing a guideline on forward capacity allocation (“FCA-Regulation”), providing rules on cross-zonal capacity calculation and allocation in the forward timeframe, thus securing sufficient hedging opportunities for market participants. The Danish and Nordic forward market has for many years been centred around price differential contracts that provide a hedge between the price in the respective bidding zone and the Nordic system price¹⁸, so-called EPADs (Electricity Price Area Differentials). EPADs are in Denmark supplemented with cross-border hedging tools provided by Energinet. The so-called LTTRs (Long-term transmission rights) enable market players to manage price differences between bidding zones and reduce financial risks, both internally between the two Danish bidding zones DK 1 and DK 2, towards the Netherlands and Germany, and - since the first quarter of 2024 – towards the United Kingdom. In line with the evaluations by the Danish Utility Regulator pursuant to the FCA-Regulation, the availability of products for hedging has been increased continuously. It is thus also an ongoing and recurring work to evaluate and if possible, improve the hedging opportunities in the Danish market, as considered necessary.

The following *figure 8* shows the number of open contracts compared to gross consumption as an indicator for the use of price hedging products on a market in the period 2022 - 2024. Open contracts show the volume of MWh which are hedged in a given period. The figure shows the distribution amongst various types of contracts, as indicated. The figure does not, however, include the trade of futures on the European Energy Exchange (EEX). Nor does it include data on PPAs (Power Purchasing Agreements), see below on that instrument.

¹⁸ The Nordic system price is a fictive price assuming that the Nordic area is one bidding zone.

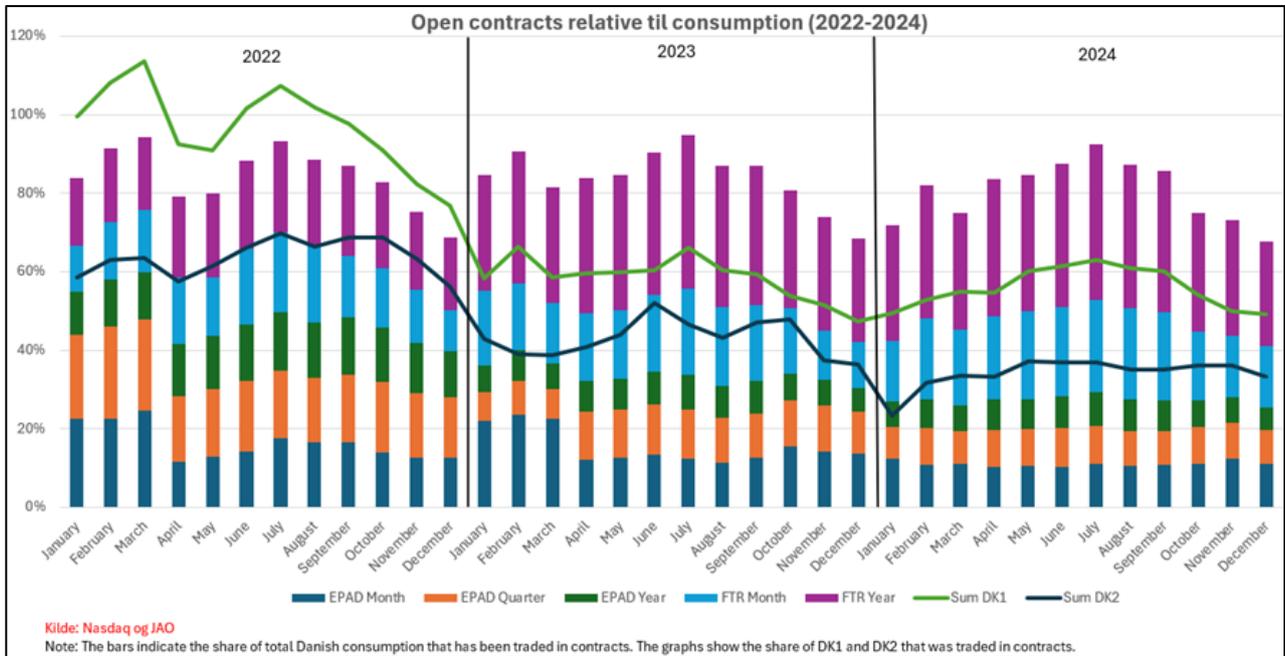


Figure 8: Open contracts relative to consumption (2022-2024) - Source: Danish Utility Regulator, which notes the following: The FTR- month and FTR- year is the auction sizes of the monthly and annual LTTRs between (1) DK1/DK2 and Germany and (2), DK1 and the Netherlands. LTTRs are also offered for Viking Link (GB and DK1), but have not been included in the figure. FTR = financial transmission rights, is a more broad term for the LTTRs, while the LTTRs is the term used for the Financial Transmission Rights sold in EU. EPAD month, quarter and year is the EPAD transactions. Please note that the graph shows open interest (number of outstanding contracts) share of consumption. The graph does not show trading volumes.

Producers are also able to engage in bilateral agreements such as PPAs, and, if available, CfD (Contract for Difference) -tenders. In 2025, the Danish Energy Agency will perform an analysis on the future role of PPAs in supporting a well-functioning, flexible, and market-based electricity system. The analysis will examine how PPAs can be designed to promote “system-friendliness”, liquidity, and market integration, beyond serving only as tools for hedging or climate branding. It will also assess regulatory options and the role of the government in supporting a transparent and accessible PPA market, with a particular focus on participation across different actor groups, cross-border opportunities, and system-oriented contract structures.

5.2 Balancing markets

5.2.1. Introduction to Denmark’s balancing market

Denmark’s balancing market is different from most Member States’ balancing markets, as it is part of both the Continental and Nordic synchronous area. The synchronous areas define many aspects of each of their balancing markets. Energinet therefore operates with a range of different frequency based ancillary services as described in *table 3* below.



DK1 balancing markets			DK2 balancing markets		
Product	Capacity market	Energy market	Product	Capacity market	Energy market
			FFR	In times of need 0-30 MW . National FFR capacity market	-
FCR	+/- 25 MW . Part of FCR Cooperation (European capacity market)	-	FCR-D	+/- 42 MW . Currently common market with Sweden	Part of common European energy activation market PICASSO (by Q2 2024)
			FCR-N	+/- 18 MW Currently common market with Sweden	Part of ocommon Nordic mFRR Energy activation market (by Q1 2025). Common European energy activation market MARI (by Q2 2026 ¹⁹)
aFRR	+/- 100-120 MW . Part of the common Nordic capacity market	Part of common European energy activation market PICASSO (by Q2 2024)	aFRR	+/- 40-60 MW . Common Nordic market (as of dec-2022)	Part of common European energy activation market PICASSO (by Q2 2024)
mFRR	+ 350-600 MW & - 0 MW . Part of common market with Sweden and Finland.	Part of common Nordic mFRR Energy activation market (by Q1 2025). Common European energy activation market MARI (by Q2 2026 ¹⁸)	mFRR	+ 350-600 MW & - 0-200 MW . Part of common market with Sweden and Finland.	Part of common Nordic mFRR Energy activation market (by Q1 2025). Common European energy activation market MARI (by Q2 2026 ¹⁸)

Table 3 – Overview of Energinet’s frequency-based ancillary services markets and international cooperation - Source: Danish Energy Agency

As can be seen from table 3, FFR is the only balancing market in Denmark, which is a purely national capacity market. Further, it can be seen that Energinet only procures balancing capacity if they deem the market would not provide enough energy activation bids. This is

¹⁹ See below on delays in acceding to MARI.



why some of the capacity products, for instance downwards regulation of mFRR in DK1, is not purchased.

Denmark's balancing markets are to a great extent (cf. *table 3*) part of the common Nordic balancing market, which initially was established in 2002 and has been further developed since.

Within the Nordic market, imbalances are managed and settled according to common rules defined in the System Operation Agreement between the Nordic TSOs. Balancing is managed within the Nordic load frequency control areas as one system consisting of all four Nordic TSOs. Thus, the system aims at the effective utilisation of the Nordic balancing resources.

In March 2018, all Nordic TSOs signed a Cooperation Agreement on an initiative called the Nordic Balancing Model (NBM). The purpose of the initiative is to update and adapt the balancing market design, develop methods and operational processes as well as related IT-systems to ensure an efficient and secure balancing scheme compliant with the European network codes. The NBM initiative is based on the introduction of modernised Area Control Error (mACE) in the Nordic Load Frequency Control Block that uses modern IT solutions to combine the balancing needs, available transmission capacity and available balancing resources in a coordinated way. The new system will make sure that power imbalances are corrected separately for each region (bidding zone), instead of the entire Nordic synchronous area like it is done today. This enables more precise cost allocation and netting between bidding zones. The NBM program also includes a common Nordic capacity market for mFRR and aFRR (coupling of equal national capacity markets).

NBM will be a Nordic steppingstone into the common European balancing platforms MARI for manually activated reserves and PICASSO for automated frequency restoration, which both have been operational since 2022. The implementation steps of the NBM initiative are illustrated in *Figure 8*. Full implementation is expected by 2026. Denmark has acceded to PICASSO in October 2024. Accession to MARI has not been achieved yet. The Danish Utility Regulator had given a derogation to Energinet extending the initial deadline for TSOs to accede to MARI by July 2022, until July 2024. The issue is currently under discussion.

Implementation of the NBM initiative has laid the foundation for the introduction of 15 minutes imbalance settlement, ACE-balancing and a common Nordic capacity market for aFRR.

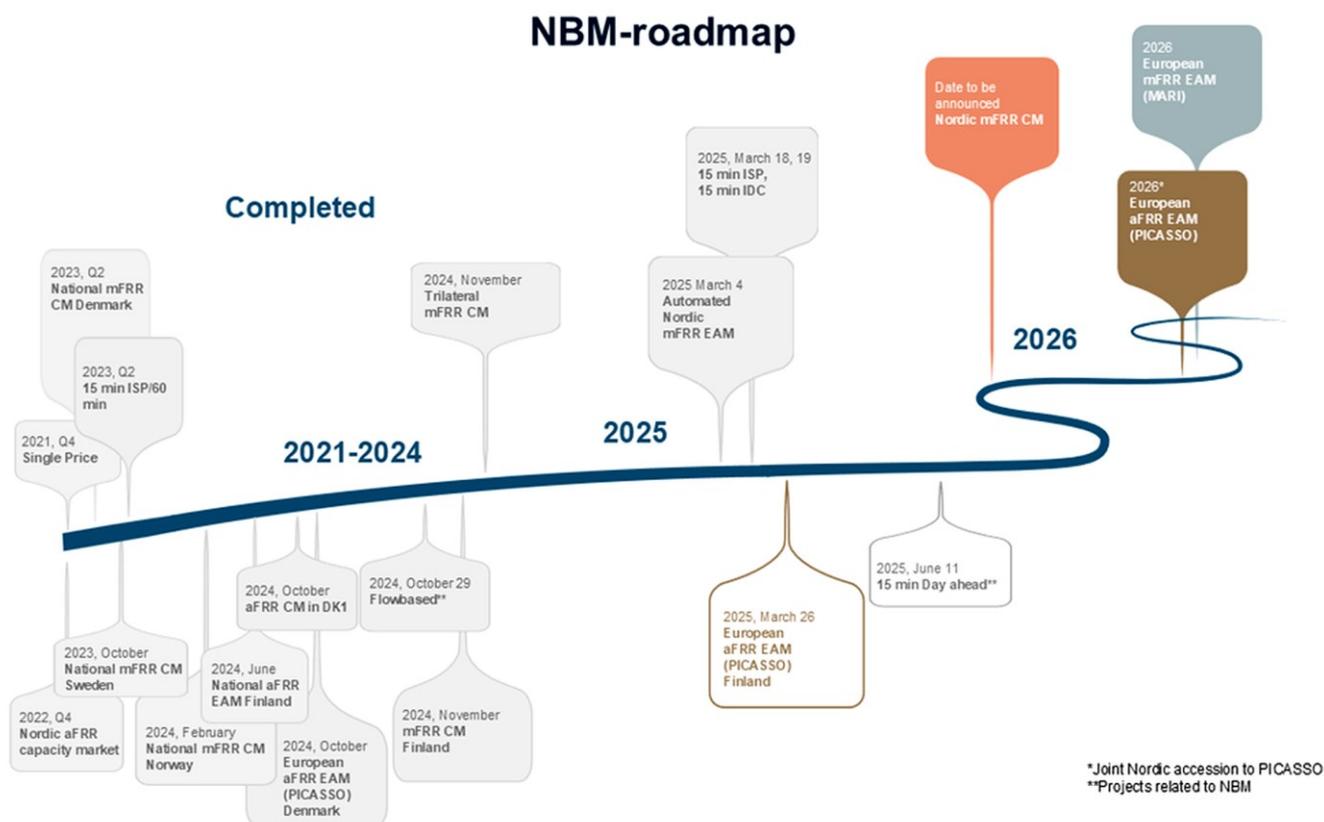


Figure 9: NBM roadmap – Source: NBM- Nordic Balancing Model²⁰

The common Nordic balancing markets and, in general, all of Energinet’s frequency based ancillary services (presented in *table 3*) are procured in a market-based way to ensure an investment signal based on market signals.

The market design has undergone a development from being focused on more traditional power plant production units towards a more technology neutral approach. The aim is to provide a level playing field across technologies, e.g., to also enable participation from renewable production units and the small (consumer) flexibility units.

Energinet has experienced a quite significant increase in units being pre-qualified for providing ancillary services to Energinet. In 2024 Energinet thus pre-qualified 272 new units which is 7 times as many as in 2023. In addition, Energinet (re)pre-qualified 278 existing units leading to 550 pre-qualifications in 2024 in total.

To strengthen the investment signal provided through market-based procurement and to increase transparency about Energinet’s different needs for ancillary services, Energinet on a yearly basis publishes two reports:

²⁰ [Nordic Balancing Model](#)



- One describes Energinet's expected needs for ancillary services for the coming year²¹
- The other describes Energinet's assessment of the demand for the next several years²².

The following chapters elaborate in more detail on the market design, and how it is designed in a technology neutral way and that it sends signals that aim to be as cost reflective as possible.

5.2.2. Balancing market design

The market-based design for all the balancing reserves are centred around the procurement through a competitive bidding process, and with no other limitations than the technical requirements and delivery time obligations, which apply to all market participants equally, including demand-side response and aggregators. Bids and offers must reflect marginal prices to avoid artificially high prices, and to ensure that the procurement process is open to everyone. The procurement of the different types of reserves (FFR, FCR, FCR-N, FCR-D, aFFR, mFFR) is conducted through daily auctions with various gate closure times, but ideally as close as possible to real time.

All bids for the relevant frequency requirements are collected into a joint Nordic merit order list. Up- and down-regulations are carried out with respect to the merit order list, taking into consideration the price order of those bids and their geographic location, considering congestions in and between control areas that are available to solve the particular balancing issue.

The balance between production and consumption is determined within 15-minute intervals, as is the imbalance price and the settlement of the market players' individual imbalances.

5.2.3. Price formation

The price of the balancing energy activation (regulating power) during the specified market time unit is determined based on ordered up- or down-regulations. This implies that the price of the regulating power is known only after the end of the specific operating hour. The price of up-regulation is set to the most expensive up-regulation bid activated by the TSO during the specific operating hour. All those who have participated in the up-regulation during the specific operating hour receive the same compensation per MWh, i.e. a pay-as-clear approach. Conversely, the price of down-regulation is the cheapest down-regulation bid activated by the TSO during the specific operating hour. All those who have participated in the down-regulation during the specific market time unit receive the same compensation per MWh. The pay-as-clear approach sends investment signals based on cost reflective bids.

²¹ Accessible via the following link [Energinet outlook for ancillary services 2025](#).

²² Accessible via the following link [Energinet outlook for ancillary services 2024-2040](#)



5.2.4. Imbalance settlement

All market participants have a balance responsibility. Imbalance settlement rules are developed by Energinet and approved by the Danish Utility Regulator. The applicable rules are summarised in the following.

All market participants are exposed to the same imbalance settlement rules. All Balance Responsible Parties (BRPs) must pay for their imbalances if their imbalances align with the systems imbalance. This incentivises BRPs to reduce their imbalances. In Denmark, both production and consumption imbalances are settled by a one-price system. In this single-price system, the purchase and sales prices of imbalance power are identical.

Since 19 March 2025, following the approval of an amended imbalance price methodology by the Danish Utility Regulator, the imbalance price in case of upwards regulation is set equal to the maximum of either the mFRR price or the volume-weighted aFRR price, and vice versa with downwards regulation, where the imbalance price is set equal to the minimum of either the mFRR price or the volume-weighted aFRR price in compliance with EU regulation. The intention with including a volume-weighted aFRR-price is that it reduces the impact of price spikes, which may occur due to the 4 second optimisation cycles in PICASSO, the European platform for aFRR energy activation. Energinet thereby avoids settlement of imbalances at unusually high marginal aFRR prices. Moreover, the presumably more stable mFRR activation prices are also applied, which is intended to cover the overall costs of energy activation for balancing.

After implementation of the new imbalance price methodology high and volatile imbalance prices have materialized due to an increase in prices on the mFRR and aFRR markets, respectively. This is due to several factors such as the implementation of flow based, 15 minutes market time units, requirements to connect to the European balancing platforms and the fact that the imbalance price is computed applying the mFRR and aFRR prices as input component. Energinet has a continuous focus on the performance and effects on the market of the new methodology and engages in discussions with the market players on developments in the mFRR and the aFRR markets to lower the prices and hence the input components.

Most of the costs for purchasing capacity for balancing are covered by a system tariff that all electricity consumers have to pay.

5.2.5. Scarcity pricing

Scarcity pricing as referred to in Article 44 (3) of Commission Regulation EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing is currently not applied in the Danish balancing market. This is also the case for the other Nordic countries. Given the high degree of integration of the Nordic balancing markets, scarcity pricing is likely to be most efficient when introduced across the Nordic region simultaneously. Should scarcity pricing be introduced unilaterally in Denmark, imbalances occurring in Denmark might be “exported” for instance to Sweden, as the markets are closely integrated. Thus, even though



higher imbalance prices in Denmark compared to neighbouring countries would give a larger incentive for market participants to trade and reduce their imbalances in Denmark, the risk of incurring larger imbalances elsewhere increases. The impact on the overall Nordic imbalance might therefore be limited. It could therefore to a large extent be similar units on the common mFRR and aFRR bidding lists that would be activated to cover the imbalances. Such effects would need to be further assessed.

Energinet, together with the other Nordic TSOs is following the topic of scarcity pricing closely. The Swedish TSO Svenska Kraftnät, in 2022/2023, commissioned a study on the development of a model for scarcity pricing²³. The study involved a proof of concept for development of scarcity pricing in Sweden/the Nordics, in a situation where Sweden, in line with other European markets, does not apply real time prices for balancing reserves. The application of real time prices for balancing reserves is, originally, a core foundation for the development of scarcity pricing in other countries, notably the United States. The conclusions of the study carried out for Svenska Kraftnät can be considered representative for Denmark, as the Nordic balancing markets are integrated.

The study concluded, that, even if a concept for scarcity pricing could be developed for a European market, the implementation of scarcity pricing in a European market is not straight forward. Notably, where scarcity pricing is to be extended beyond mFRR, it reveals more general market design questions of a coherent European balancing market design. The study resulted in an estimated scarcity adder to the imbalance price up to 7.71 EUR/MWh.

Considering the magnitude of development related to scarcity pricing, the ongoing roll-out of the NBM program and the upcoming joining of MARI, there is currently no specific plan to implement scarcity pricing in the Danish market. However, scarcity pricing remains relevant to consider, also for the Danish market. Following the implementation of the Nordic Balancing Market model (including joining MARI) it will be relevant to further consider the relevance of scarcity pricing or elements of it for the Danish market.

Finally, Denmark notes, that in the process of implementation of the NBM, the imbalance price has recently been adapted so as to also reflect the aFRR balancing energy. Although the inclusion of the aFRR price is done volume-weighted to avoid the impact of price spikes in PICASSO, the inclusion has resulted in increased volatility of the imbalance price and higher levels than previously seen. This implies that a larger revenue can be obtained by satisfying the imbalance need that may also contribute to investment signals.

5.3 Non-frequency ancillary services

The need for non-frequency ancillary services can be covered through a number of different instruments. These include connection agreements with users, agreements with DSOs concerning the system interface, fully integrated net components or market-based procurement from system users. Energinet uses all those instruments, depending on the

²³ See [2022 Svk scarcity pricing project part 1](#) and [2023 Svk scarcity pricing project part 2](#).



type of service concerned and its specific characteristics²⁴. Market-based procurement through tendering is notably used for black-start capability and island operation capability, partially also for inertia for local grid stability. Other services, such as steady voltage control are principally covered by fully integrated net components, in some cases in combination with connection agreements with system users. Energinet is in an on-going dialogue with market actors exploring possibilities to expand market-based procurement of ancillary services. In 2018, Energinet had sent a methodology regarding compensation in connection with the procurement of voltage regulation to the Danish Utility Regulator for approval, however, the Danish Utility Regulator did not find the methodology approvable²⁵, as the Danish Utility Regulator did not consider the method as being market-based.

5.4 Demand-side response

5.4.1. Overview over recent and upcoming initiatives supporting the emergence of a flexible energy market

Based on a 2018 political agreement in the energy sector, the Danish Energy Agency in cooperation with Energinet undertook a project regarding the further development of the Danish energy market model in order to achieve the emergence of a flexible electricity market that supports the transition towards a climate-neutral society. The starting point of the Market Model 3.0 project was the effective implementation of Danish and European climate and energy objectives, including the implementation of the requirements of the EU's Clean Energy Package.

The project resulted in the publication, in 2021, of a number of detailed analyses and recommendations for the development of the electricity market²⁶, which directly and indirectly support the participation of demand-side response in Denmark and thus constitutes a framework for ensuring the integration of demand-side response in the energy system.

The work undertaken in the overall project formed the foundation for the implementation of Directive (EU) 2019/944 on common rules for the internal market for electricity ("the Electricity Market Directive") into Danish law, such as, for example, putting in place a regulatory framework for aggregators, or the publication of DSOs network development plans and their update every other year.

However, the recommendations from the project went beyond the directive's requirements. They include, for example, the development of geographic tagging of bids in the balancing market by Energinet and the release of anonymised data at distribution level for supporting the development of new market products. In some instances, an amendment of the underlying legislation was necessary in order to follow up on these recommendations, and where this was the case, the Danish Electricity Act has been amended subsequently. Thus, the possibility to require the release of anonymised data at the distribution level was made

²⁴ See [2020 Energinets baggrundsnotat om analyse af kritiske egenskaber](#) (in Danish).

²⁵ See [2018 decision by DUR on compensation models for ancillary services](#).

²⁶ See [Market Model 3.0](#).



possible by an amendment of the Electricity Act in 2022 and implemented in secondary legislation in 2024.

Furthermore, a number of recommendations have led to the subsequent implementation of more in-depth projects in order to further promote flexibility. For example, the Danish Energy Agency has recently published two studies that analyse the use of flexible connection agreements and identify a possible roadmap towards the development of local flexibility markets²⁷.

Other important initiatives for supporting the flexibility agenda included the implementation of geographically differentiated tariffs. Thus, the possibility to offer geographically differentiated tariffs was introduced for producers in 2022 and – within certain limitations – for consumers in 2023.

Most lately, the Danish legislation implemented Directive (EU) 2024/1711 regarding the improvement of the Union's electricity market design ("the EMD-Directive"), including provisions on the establishment of a national framework for flexible connection agreements, see further below.

Finally, the Danish Energy Agency is expected to undertake further analysis of flexibility needs, potential, barriers and solutions to ensure security of supply in the coming years. It is expected that this analysis will in turn inform the flexibility need assessment and subsequent identification of flexibility targets pursuant to what is provided in the electricity market regulation as amended in 2024 by Regulation (EU) 2024/1747 regarding the improvement of the Union's electricity market design ("the EMD-Regulation").

5.4.2 Aggregators

Aggregators play an important role in bringing demand-side response to electricity markets. Danish electricity sector legislation implements the requirements of the Electricity Market Directive regarding aggregators in secondary legislation²⁸. The secondary legislation requires Energinet to adopt the necessary market rules that ensure clear roles and responsibilities of aggregators, especially with regard to the integration of so-called independent aggregators in the market. Independent aggregators are aggregators that are not in any way, structurally or contractually, affiliated to the customer's electricity supplier, and their role is thus limited to bringing their customers' flexibility to the electricity markets. The Electricity Market Directive requires Member States to enable independent aggregation, which raises issues notably regarding the interplay of the independent aggregator's activities with those of their customers' suppliers and balancing responsible parties.

Energinet's market rules address these issues by establishing a model involving correction and compensation obligations of the independent aggregator vis-à-vis suppliers and

²⁷ See [Flexibility studies](#) (in Danish).

²⁸ See [Aggregeringsbekendtgørelse](#) (in Danish).



balancing responsible parties, thus enabling the electricity system to profit from the entry of independent aggregators, while at the same time ensuring that supplier and balancing reporting parties are not adversely affected by the independent actors activities in the market. The Danish Utility Regulator has approved the methodologies in Energinet's market rules on 1 October 2024 and the focus of implementation efforts has now moved to establishing the relevant operational processes necessary for integrating the approved framework in DataHub, the IT-system handling all data communication between market participants. See section 5.3.5. below for a more detailed description of DataHub. Energinet expects the necessary technical adaptation of DataHub regarding independent aggregation to be in place by the mid-2026.

5.4.3. Market participation of demand-side response

With the implementation of aggregators, it is possible for demand-side response to engage in electricity markets both through individual players and via an aggregator.

The technical requirements for aggregators are similar to those applying to other market participant, and aggregators can thus engage in the various markets on equal terms.

From a market perspective there is no distinction between bids and orders from generation and demand-side response on any market. NEMO's are, according to article 8(3) of the Electricity Market Regulation, obliged to provide products for trading in day-ahead and intraday markets, with minimum bid size of 500 kW or less. The Nordic NEMO Nord Pool allows for bids from 0.1 MW and up on both day-ahead and intraday markets. This applies for both generation and demand-side response and is therefore applicable to all Danish generators and consumers.

All balancing and ancillary service markets are open for participation for all technologies and resources, including demand-side response, as long as they comply with the technical requirements.

Minimum bid sizes for balancing markets vary and are as follows from *table 4*:

	FFR	FCR-D	FCR-N	FCR (DK1)	aFRR	mFRR
Min. bid size (MW)	0.3	0.1	0.1	1	1	1

Table 4. Minimum bid-sizes in the balancing markets

Furthermore, bids can be combined by multiple resources, both demand-side response and production or a mix of both, as long as they - in combination - can comply with technical requirements.

5.4.4. Smart meters

Implementing the provisions on the deployment of smart metering systems in the predecessor to the Electricity Market Directive, Directive 2009/72/EC concerning common



rules for the internal market of electricity, Danish secondary legislation²⁹ was adopted in 2013 requiring DSOs to install remotely read electricity meters in private homes and in businesses for all final customers in Denmark by the end of 2020. The legislation requires, inter-alia, meters to enable registration of consumption/feed-in of electricity to the net in at least 15-minute intervals. There is an exemption for meters that do not meet that and/or other technical requirements laid down in the legislation, provided that they were installed prior to the date of entry-into-force of the obligation in 2013 and provided that the transmission of hourly consumption data to DataHub is possible. In those cases, where the 15-minute requirement is not met, the meters have to be replaced upon their end-of-life, with meters meeting that requirement, or, upon request by the customer, in which case the expense for replacement is borne by the customer. The practical implementation of the obligation to install smart meters was slightly delayed in individual cases, but the 100 pct. roll-out of smart meters was achieved by the end of 2022. Many DSOs had already begun installing smart meters prior to introduction of the obligation in 2013. Therefore, not all installed smart meters, comply with the 15-minute requirement yet³⁰. Even where consumers' smart meters do not yet measure in 15-minute intervals, the meters installed allow electricity consumers to benefit from deploying their flexibility, both through dynamic price contracts and the participation in markets, either directly or via aggregators. The full installation of smart meters and the Danish DataHub, see the following section, also make it much easier for consumers to switch retail supplier, thereby enhancing retail market competition.

5.4.5. DataHub

In 2013, the Danish DataHub was implemented on the Danish retail market for electricity. DataHub is a central and independent IT-system operated and owned by Energinet. Besides handling all data communication between market participants, DataHub collects vast amounts of data regarding final customers, their consumption, and applicable tariffs for approximately 3.3 million measuring points. DataHub has been supporting 15-minute metering since August 2025.

DataHub can benefit resource adequacy by enabling real-time data transparency, demand response, and better integration of renewables. It supports flexible consumption, improves forecasting, and facilitates new market models, helping to reduce peak demand and improve system balancing.

DataHub is essential in ensuring a level playing field for all electricity suppliers through:

- Standardised processes for registration and distribution of market data.
- Clear definition and scoping of the roles of distribution system operators and electricity suppliers.
- Equal terms and conditions for access to the market.

²⁹ See [Bekendtgørelse om fjernaflæste måler](#) (in Danish).

³⁰ For a status on the type of smart meters installed in the different DSO net areas, see the [webpage of Green Power Denmark on types of meters](#).



- Automation and simplification of supplier switch.

The primary target group of DataHub are professional market participants. For them the system provides a means for communicating measured electricity consumption and other relevant data for the purpose of ensuring correct billing of final customers. Market participants can communicate with DataHub through their own IT-systems or through the DataHub Marketportal, a web-based access point to DataHub. Additionally, DataHub provides APIs that enable market participants to develop applications and digital services utilizing electricity consumption data.

Danish electricity consumers have the right to see their own data in DataHub through their electricity supplier's homepage or a dedicated website provide by Energinet (www.eloverblik.dk).

5.4.6. Flexible connection agreements – Limited grid access

The EMD-Directive has introduced a new requirement concerning the development of a framework for TSOs and DSOs regarding flexible connection agreements. This requirement has been transposed into Danish legislation. Flexible grid connections are essential to address grid constraints including through demand response, and potentially to also improve resource adequacy. Flexible connection agreements serve as a tool to allow consumers and producers to gain faster access to the grid, while providing system operators with the ability to manage grid constraints dynamically.

However, already prior to the new EU-requirement, Energinet and DSOs have offered permanent flexible connection agreements, in Denmark known as “limited grid access” agreements, on the basis of methodologies approved by the Danish Utility Regulator.

Different methodologies are applied at the TSO and the DSO levels. At the TSO level, the agreements allow electricity consumers to achieve rapid connection to the grid at a reduced network tariff. However, consumers must accept the risk that the TSO may interrupt or reduce grid access at any time due to grid overload or technical failure. Thus, Energinet avoids grid expansion based on the specific needs of an individual customer, as long as the customer opts for a flexible connection agreement. The agreements also enable consumers to provide certain balancing services, creating additional benefits from rapid grid connection.

At the DSO level, limited grid access agreements follow a similar concept and are offered to both electricity consumers and producers at voltage levels of 10 kV and over. In both instances, customers can gain rapid grid access, while the DSO retains the option to interrupt supply or injection during grid overloads. At the DSO level, compensation takes the form of a rebate on the connection fee, thus offering a one-time cost saving. This is different from the TSO-level, where Energinet does not charge a connection fee, and therefore offers a reduction of the general network tariff.



As part of the implementation of the new provision on flexible connection agreements in the electricity market directive, Energinet and DSOs are in the process of developing methodologies for intermittent flexible connection agreements, i.e. offering non-firm connection agreements to customers pending network development, which, once designed will have to be approved by the Danish Utility Regulator before they can be implemented.

5.5. Retail markets and regulated prices

The Danish retail electricity market has been liberalised since 2003, making it possible for all Danish consumers to freely choose their electricity supplier. A range of other important market reforms were introduced in the following years – all aimed at further stimulating competition in the electricity retail market. In 2013, the first version of the Danish DataHub (see above) was implemented with the objective to simplify and manage communication and standardise the market processes between market participants. The former “supplier of last resort”-scheme, which ensured that consumers who had not actively chosen a supplier in the market still received electricity at regulated prices set by the Danish Utility Regulator, was abolished in 2014, with effect from October 2015. It was replaced by the obligation on all electricity suppliers in the retail market to supply household customers, and the right for those to freely choose any of the products offered by a specific supplier to household customers in the customer’s grid area.

However, the abolition of the supplier of last resort scheme resulted in the need for a mechanism to ensure that, in the event of a supplier’s bankruptcy or other cases where the supplier stops operations³¹, customers will not be cut-off from receiving electricity. In this case, the mechanism provides that the customer is temporarily assigned to another supplier according to an algorithm applied by Energinet. The algorithm design is regulated in secondary legislation. Where this mechanism is applied and a customer is temporarily assigned to another supplier, this appointed supplier charges the customer a price equal to the spot-price and a cost adder set on an annual basis for this type of product by the Danish Utility Regulator. The new supplier has to provide information to the customer on the product thus defined and on the possibility to switch to another supplier or another product with a notice of one month to the end of the month. The mechanism has not been activated very often and has only affected a limited number of customers. Thus, in the period from 2021 to date³² there have been 8 instances where in all 2057 customers were assigned to another supplier under the mechanism.

³¹ For example where a supplier ceases to comply with the requirements and guarantees necessary for being able to participate in DataHub, the supplier may be excluded from DataHub. Also, in connection with the supplier centric model, see below, the TSO and DSOs may lawfully require the supplier to maintain certain guarantees. Where the supplier fails to do so, it may be excluded from offering its services in the relevant geographic network area. It should be noted that the methodologies for the procedures employed in such cases have approved by the Danish Utility Regulator.

³² 22 May 2025.



In 2016, a new market design – the supplier-centric model - was introduced. According to this model, the prime contact for the customer is its supplier, which bills the customer, including for the TSO and DSOs network tariffs and taxes and levies. The system relies heavily on DataHub. It was aimed at increasing competition and supporting the development of new consumer products and services.

According to the latest available monitoring report from the Danish Utility Regulator on the Danish electricity and gas markets³³, in 2023, there were approximately 56 electricity suppliers, from among which consumers could choose. Consumers can switch suppliers from one to another for a potential cost saving. According to the Danish Utility Regulator's report, despite the potential savings, the external switching rate has remained more or less constant since 2014 for household and non-household consumers with an annual consumption of up to 100,000 kWh. The switching rate was 9.4 pct. in 2023 compared to 8.4 pct. in 2022.

Denmark has not made use of the possibility in article 5(3) of the Electricity Market Directive to intervene in the price setting for the supply of electricity to energy poor or vulnerable household customers. In Denmark, energy poverty is addressed through social policy and targeted social services, not by regulating prices for energy. For example, pensioners may receive a heating supplement to pay for heating and hot water. Also, persons who qualify for cash assistance under social policy legislation and who have high housing costs or high costs in relation to dependants may receive special support.

5.5.1. Electricity retail prices and products

The electricity price paid by Danish consumers consists of four main components: the energy price, grid tariffs, taxes, and VAT. The distribution and development of these components over time are illustrated in *figure 9*. VAT is applied to the full electricity price, including grid tariffs and taxes.

³³ See [DUR - Danish electricity and gas markets report 2023](#).

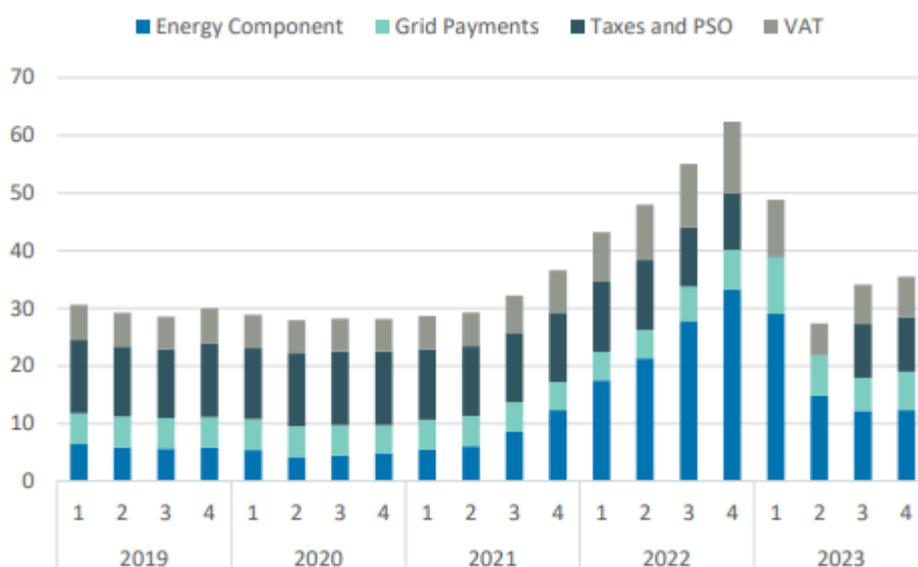
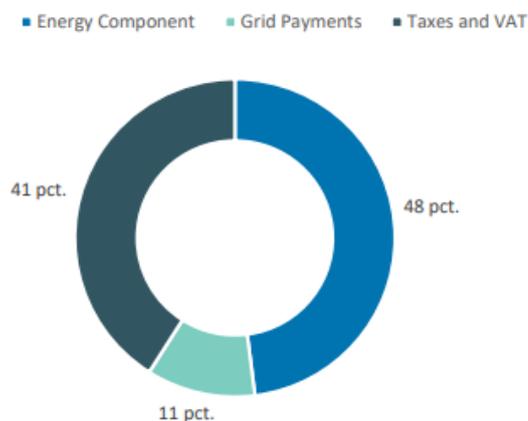


Figure 10: Breakdown and development of total electricity prices for household consumers - Source: Danish Utility Regulator: The Danish Electricity and Natural Gas Markets 2023 report³⁴.

The figure on the left shows the breakdown for the year 2023, where taxes and VAT make up a significant portion of the total electricity price, while the figure on the right presents the historical development in average total electricity price for Danish household consumers in cEUR/kWh, highlighting fluctuations in energy prices and the stability of fixed charges such as grid tariffs³⁵. Note that the Danish PSO was no longer considered in price statistics from Q3 in 2021, and that the electricity tax for households was reduced to what amounts to 0.1 cEUR/kWh, corresponding to the minimum rate according to the Energy Tax Directive in the

³⁴ See [DUR - Danish electricity and gas markets report 2023](#).

³⁵ Both figures are based on 4000 kWh as an annual household consumption.



first half of 2023. The tax share in the average total electricity price is thus not visible in the figure for that period.

Denmark has implemented a high electricity tax of 71.6 øre/kWh (€ 96/MWh) pr. 1 January 2025 (exclusive of VAT), which serves as an incentive for energy savings by encouraging more efficient electricity consumption. Reduced tax rates apply to the electricity consumption exceeding 4,000 kWh per year in households where electricity is the primary source of heating. In addition, household customers are eligible for a tax refund on electricity used for charging electric vehicles.

With the revision of the Electricity Market Directive, new measures have been introduced at EU-level to protect consumers from high electricity prices. One key initiative is the implementation of time-limited fixed-price contracts, which ensure that electricity suppliers cannot alter contract terms, including prices, for one year after the agreement is signed. This provides consumers with greater price security and predictability. These requirements have been transposed into Danish legislation with effect from 17 January 2025³⁶.

Electricity consumers also have the option to choose dynamic price contracts, where the price paid is directly linked to the spot price on the wholesale market³⁷. This has been made possible by the nationwide rollout of smart meters, enabling real-time consumption measurement. The majority (83.9 pct³⁸) of Danish electricity non-household consumers (irrespective of consumption volume) are on a dynamic price contract, meaning they are exposed to fluctuating electricity prices and, consequently, have a financial incentive to reduce consumption during periods of scarcity. No official statistics are available for household consumers. However, there are indications that also households increasingly chose dynamic price products³⁹.

5.5.2. Network tariffs

In Denmark, the design of tariff methodologies is the responsibility of Energinet and DSOs⁴⁰. They are subject to approval by the Danish Utility Regulator before they can be implemented. The Danish Utility Regulator is also responsible for ensuring that tariffs applied are in line with approved methodologies. The design of tariff methodologies must comply with article 18 of the Electricity Regulation and § 73 of the Electricity Supply Act, according to which tariffs must be designed based on fair, objective, and non-discriminatory criteria, reflecting the costs incurred by different consumer categories.

³⁶ See [Elleveringsbekendtgørelse](#) (in Danish).

³⁷ See previous fn.

³⁸ See the Danish Energy Agency's electricity price statistic for the first half of 2024, accessible (in Danish) via the following link [Elprisstatistik pressemeddelelse oktober 2024](#).

³⁹ See [news item of 15. November 2024](#) (in Danish) published by the interest organisation Green Power Denmark.

⁴⁰ As of 1 September 2025, there are 34 distribution system operators in Denmark, all licensed for a specific geographically defined area.



Within this framework, Danish consumers pay tariffs to both the TSO and their DSO. To provide price signals that enhance flexibility in the electricity grid, almost all Danish DSOs (serving 99.7 pct. of all consumers) have introduced a new tariff structure incorporating time-of-use pricing. This ensures lower electricity tariffs during night time and higher tariffs during peak afternoon hours. Additionally, seasonal variations apply, with higher tariffs in winter compared to summer.

Energinet is also modernising its tariff design to support the green transition and a more flexible electricity system. Key changes include, among other, capacity-based pricing reflecting grid usage. The network tariff will thereby be charged as a capacity fee rather than an energy tariff, which provides market participants with an incentive to reduce peak load and spread its demand across the day. The new methodology has been submitted to the Danish Utility Regulator in view of approval, and, provided that such approval will be obtained, is expected to be implemented by 2026.

In April 2023, the Danish Electricity Act was amended in order to strengthen the effective integration of increased amounts of renewable energy into the electrical grid by promoting suitable siting of electricity consumption and production, such as PtX-facilities, heat pumps, and new green electricity production. The new legislation enables, inter alia, the establishment of privately owned direct electricity lines⁴¹ for large electricity consumers and producers⁴². The purpose of direct lines is to ensure better conditions for green technologies, including PtX facilities. Additionally, the legislation will also allow Danish DSOs and Energinet to develop geographically differentiated consumption tariffs for large electricity consumers (above 10 kV). This is intended to provide economic incentives for large electricity consumers to locate themselves in areas with sufficient grid capacity or close to electricity production. The implementation of direct lines and geographically differentiated tariffs can potentially contribute to a faster connection of both consumption and production facilities, and can thereby lead to a more rapid buildout of capacity contributing to improving resource adequacy.

Finally, it may be noted, that Energinet and Green Power Denmark, representing the vast majority of Danish DSOs, are currently working on developing a so-called TSO-DSO tariff model. The model would enable Energinet to set tariffs to the DSO at the intersection between the TSO and DSO grid. The DSO would thus be treated as a TSO-customer on a tariff basis. The DSO would forward the cost from the TSO to the DSO-connected customer. According to the model, the DSO would thus have a larger pool of grid costs from both Energinet and the DSO itself that can be allocated in a more cost-reflective manner. Increased cost-reflectiveness in tariff allocation is likely to strengthen tariffs as a means to contribute to more efficient grid use, and incentivise flexible behaviour from grid users.

⁴¹ Direct lines within the meaning of article 2, no. 41), of the electricity market directive.

⁴² By 1 September 2025, the Danish Energy Agency had received 11 applications for the establishment of direct lines. 5 were granted, 1 refused, 1 was withdrawn by the applicant and 4 are still pending.



Besides being subject to approval by the Danish Utility Regulator, the implementation of a TSO-DSO tariff model would require an amendment to the Danish Electricity Act.

On flexible connection agreements with reduced tariffs (Energinet) or connection fees (at DSO-level), see section 5.4.6. above.

5.6 Self-generation, energy storage and energy efficiency

A suitable regulatory framework for self-generation, energy storage and energy efficiency can play a key role in strengthening resource adequacy by enabling consumers to actively participate in the energy system, reducing peak demand, and enhancing system flexibility. Self-generation allows consumers to produce and use their own electricity, alleviating pressure on the grid. Energy storage supports system stability by balancing fluctuations in renewable generation, while energy efficiency measures contribute to lowering overall electricity demand. Together, these elements create a more resilient and efficient electricity system and an improved resource adequacy.

5.6.1. Self-generation

Denmark has no official targets regarding the promotion of self-generation. Self-generators profit from a regulatory framework in accordance with article 21 of Directive (EU) 2018/2001, as amended, on the promotion of the use of energy from renewable sources, with the possibility of establishing internal grids in the production chain for own consumption.

As a consequence, self-generators are secured against discriminatory and disproportionate procedures and fees not reflecting the costs in relation to the electricity they consume from or produce to the net or their own self-produced electricity remaining on their premises.

Danish legislation guarantees self-generators, inter alia, the right to install and operate storage systems combined with production facilities, without duplication in charging, in terms of tariffs, for storing electricity within their own premises. Self-generators are also entitled to be remunerated for the electricity supplied to the grid, reflecting the market value of electricity.

Today, renewable self-generators do not pay any transmission tariffs for the self-generated electricity consumed by their own facilities. On the other hand, DSOs currently charge an energy-based availability tariff or a fixed payment, varying between DSOs and depending on the voltage level for each consumer connected to the grid according to the current tariff methodology. This charge covers the DSOs' costs associated with having the electricity grid capacity available for self-generators. The methodology for this tariff has been approved by the Danish Utility Regulator.

Self-generators are also exempted from paying any electricity tax for their consumption of electricity produced by their own resources of wind, hydro, biogas, biomass, solar, tidal, wave or geothermal.



5.6.2. Energy storage

Where an energy storage facility is comparable in function, character and effect on the electricity system to an electricity production facility, it is within the current legal framework considered to be covered by the same rules applying to electricity production facilities. In this sense, according to current administrative practice, energy storage is not treated differently from any other production facility.

Generally speaking, approval requirements apply to electricity production facilities - and thus according to current administrative practise - to storage facilities above 5 MW and up to 25 MW but depending on the type of facility and whether they use renewable energy for production, exemptions from the approval requirement apply. For example, all facilities producing renewable energy with an effect below 10 kW are exempted from approval requirements. Facilities above 25 MW have to comply with specific requirements under electricity legislation, including a permit for their establishment and an electricity production permit or license. The reason for extending requirements for generation facilities to storage facilities is that such facilities affect the electricity system, and thus electricity security of supply in the same way as an electricity production facility.

However, taking into account that many energy storage technologies are still under development and thus are emerging technologies, further analysis on the potential of and barriers for energy storage will be undertaken. The analysis is expected to identify the need for further action in this area and will form an integral part of a broader analysis of flexibility needs, potential, barriers and solutions to ensure security of supply, referred to above, which in turn will inform the flexibility need assessment and subsequent identification of flexibility targets pursuant to what is provided in the electricity market regulation (article 19e and 19f) as amended in 2024 by the EMD-Regulation. The outcome of the analysis is expected to be reflected in the upcoming Danish flexibility need assessment, which is to be sent the European Commission and ACER no later than 28 July 2026.

5.6.3. Energy efficiency

Denmark's energy efficiency efforts consist of several initiatives covering all energy consumption. Initiatives with a focus on reductions in electricity use cover most sectors, but it is primarily targeting households.

In general, the Danish Energy Agency, Energinet and DSOs engage in information campaigns to promote energy efficiency, including reductions in electricity consumption. These information efforts focus on both private households but also businesses and the public sector. The efforts include the preparation of material on energy-efficient solutions, information regarding building regulations and easy access to information and knowledge on energy renovation.

The Danish Energy Agency's website, Sparenergi.dk, and associated social media are used in the Agency's communication about energy efficient solutions. In addition to SparEnergi.dk and associated channels, the information effort also consists of several targeted campaign



efforts and free and impartial advice (by telephone and in writing), as well as local inspiration and advice meetings.

In addition to information efforts, there are also a number of subsidy schemes with the aim of reducing energy consumption. There are a few subsidy schemes targeting private households, where individuals can apply for subsidies that would help the transition to heat pumps for heating. Households can also apply for subsidies for renovation of their houses, for example changing of windows or improved insulation. There is also a subsidy scheme targeting enterprises, where it is possible for companies to apply for subsidies for energy efficiency projects that, among other things, result in reductions in electricity consumption.

All the above-mentioned efforts come on top of the general market initiatives as described in the sections above, including, inter alia, differentiated tariffs and the full roll-out of smart meters to incentivise flexibility and the efficient use of electricity.

5.7 Interconnection

5.7.1. Interconnectivity

Denmark has one of the highest electricity interconnection rates in Europe and the 15 pct.-target in Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action, article 4, (d), is well surpassed. The current interconnection rate in Denmark as of 2024 is 49.1 pct.⁴³, and according to the hearing version of the 2025 analytical assumptions by the Danish Energy Agency⁴⁴, the interconnection rate in 2030 is projected to be around 30 pct. The decrease in the interconnection rate is primarily due to a significant buildout of renewable solar and wind energy, while buildout of interconnections continues at a slower rate.

Larger infrastructure projects are developed by Energinet and approved by the Danish Energy Agency and the Ministry of Climate, Energy and Utility. Energinet is the sole developer of electricity transmission projects, and these projects are evaluated in terms of the following elements:

- well-functioning energy markets
- security of supply
- risk preparedness
- integration of renewable energy.

In addition to the above criteria, interconnectors are evaluated based on socioeconomic benefits.

The nominal capacity of the current interconnectors is shown in *table 5*, below.

⁴³ Calculated as the (import) interconnector capacity in MW divided by the installed capacity in MW. Calculated by the Danish Energy Agency.

⁴⁴ See link in footnote 8.



Interconnector	Bidding zone border	2025 capacity*
Skagerrak 1-4	DK1 - NO2	1632 MW
Konti-Skan	DK1 - SE3	715 MW
Endrup-Germany	DK1 - DE	2500 MW**
COBRAcable	DK1 - NL	700 MW
Viking Link	DK1-UK	1100 MW***
Øresund	DK2 - SE4	1300 MW
Kontek	DK2 - DE	600 MW
Kriegers Flak	DK2 - DE	400 MW
The Great Belt	DK1 - DK2	600 MW
Total		8,854 MW

*Import capacity

** Expansion to 3500 MW from Q2 in 2026

*** Full capacity of 1400 MW available from Q2 in 2026

Table 5: Interconnector capacity in Denmark – Source: Energinet

In their most recent report from 2023, the Danish Utility Regulator calculated that the average export capacity of the Danish bidding zone borders, was 81.1 pct. (0.4 pct. decrease from 2022), while the import capacity was 85.5 pct. (0.3 pct. increase from 2021). Denmark has only applied one import restriction to the newly established Viking Link to UK, from 1400 MW nominal capacity to 1.100 MW restricted capacity. This restriction is expected to last until Q2 2026 where the internal DK1 grid is sufficiently re-enforced following the construction of the so-called “West coast connection”, which is a 400 kV line stretching from the DK1-DE border to Idomlund in Western Jutland.

5.7.2. Internal grid capacity

Currently, internal network congestions are limited, but Energinet expects rising challenges in the future. Efforts are being made to expand the network, although it is challenging to keep up with the pace of the development in grid connection demand, given longer lead times for grid enforcements compared to, for instance, the installation of PV. However, recent policy decisions allow for faster environmental approval of grid enforcements, and are expected to lower the total project lead time significantly.

Table 6 shows a list of transmission grid projects approved or in the approval process by the Danish Minister for Climate, Energy and Supply.



Project	Expected timing
Construction of the 400 kV West coast connection in DK1 ⁴⁵	The project was approved by the Danish Minister for Climate, Energy and Supply in 2017. The project is expected to be completed in Q4 2026.
Upgrade of the Northern Jutland grid consisting of a new 100 km 150 kV cable from Nørresundby via Klim Fjordholme to Mosbæk ⁴⁶	The project was approved by the Danish Minister for Climate, Energy and Supply in 2024. The project is expected to be completed in Q4 2031.
Upgrade of the current 200 km 400/150 kV east coast line in DK1 from Aarhus to Aabenraa through the establishment of two 400 kV lines with increased capacity and one 150 kV line ⁴⁷	The ministerial approval of the upgrade is expected later in 2025. The project is expected to be completed by 2034.
Build out of the transmission grid in DK2 consisting of three new lines. ⁴⁸ <i>1. A new 47 km 400 kV line from Ringsbjerg to Vordingborg</i> <i>2. A new 28 km 220 kV line from Vordingborg to Eskilstrup</i> <i>3. Two new 41 km 220 kV lines from Vordingborg to Nørre Rasted</i>	The ministerial approval of the upgrade is expected later in 2025. The project is expected to be completed by 2033.

Table 6: Transmission grid projects – Source: Energinet

In 2023, Energinet applied redispatch/countertrade at a total value of 1.4 billion DKK. The redispatch/countertrade is primarily related to structural countertrade at the German-DK1 border, which is initiated and paid for by the German TSO TenneT, and relates to internal congestions in Germany and not in Denmark (DK1). The approach to structural countertrade follows a fixed methodology, approved by the Danish Utility Regulator⁴⁹.

The lower voltage level infrastructure (≤ 100 kV) is managed by individual DSO's. According to the Danish electricity supply act § 22, DSO's are obliged to establish and publish network

⁴⁵ See [West coast line](#).

⁴⁶ See [Nordjylland](#) (in Danish).

⁴⁷ See [Aarhus-Aabenraa](#) (in Danish).

⁴⁸ See [Vordingborg](#) (in Danish).

⁴⁹ See Energinet's webpage (in Danish) for more information on the [countertrade methodology](#).



development plans with an outlook of 10 years. The obligation is based on article 32 of the Electricity Market Directive. The plans have to be updated every other year. They are reviewed by the Danish Utility Regulator with input from the Danish Energy Agency on energy policy-related aspects. The network development plans are published on the website of the Danish Utility Regulator.

6. Overview of measures

Over the course of the upcoming years, several new initiatives will be developed and implemented, which will further strengthen the functioning of the Danish energy market. The initiatives are summarised in the following *table 7*.

Market	Initiative	Contribution to market	Time horizon
Wholesale markets - PPAs	The Danish Energy Agency will in 2025 initiate an analysis of how future PPA designs can support flexible, 'system-friendly' and well-integrated electricity market. See section 5.1.2.	The outcome of the analysis will provide recommendations on PPA designs and regulatory options that will enhance liquidity. Transparency, and participation across actors, thereby strengthening market functioning.	The analysis will be finished end 2025.
Balancing and retail markets	Implementation of independent aggregators for remaining balancing markets (aFRR, mFRR and FCR-N). See section 5.4.2.	Independent aggregators will allow more parties to engage in the energy-based balancing markets, which could improve liquidity of the markets and attract more resources.	Full implementation expected for end-2025.
Balancing markets	Accession to MARI	Improved competition for mFRR-services	Full implementation expected for Q2/2026
Scarcity pricing	Further consideration of scarcity pricing. See section 5.2.5..	Scarcity pricing has the potential to more accurately reflect the incremental value of reserve capacity in real-time operations.	Expected not before full implementation of the NBM-initiative, expected for 2026.
Storage	Further analysis on the potential of and barriers for energy storage. See section 5.6.2.	Ensuring utilization of the full potential of energy storage.	2026/2027



Market	Initiative	Contribution to market	Time horizon
Flexibility	Further analysis on flexibility need, potential, barriers and solutions with a focus on resource adequacy and system security. See section 5.4.1.	Ensuring utilization of the full potential of energy storage.	2026/2027

Table 7: Overview of measures

7. Concluding remarks

In accordance with article 20 of the Electricity Market Regulation, Denmark is hereby requesting the opinion of the European Commission on the implementation plan and the measures described in it. Following the assessment of its plan by the European Commission, Denmark will publish the plan, taking account of the opinion of the Commission. Denmark will subsequently monitor the application of the implementation plan in annual reports that will be published and submitted to the European Commission for an opinion, on whether the national implementation plan has been sufficiently implemented.



APPENDIX - Questionnaire on possible regulatory distortions and market failures

Section 1 - General wholesale market conditions

1. Concerning day-ahead and intraday electricity prices, are there any formal or informal price limits other than those currently applied within European single day-ahead and intraday coupling as set out in Article 41(1) and 54(1) of Regulation 2015/12225 (CACM)?

No, there are no such formal or informal price limits. See section 5.1.2.

2. Are there any formal or informal rules or requirements that limit generators' ability to freely price their offers in wholesale markets?

No, there are no such formal or informal limits. See section 5.1.2.

3. Are there any rules or provisions, which require the TSO to release generation reserves to the market when market prices rise above certain thresholds?

No, this is not the case in Denmark. See section 5.1.2.

4. Are there currently any capacity mechanisms (i.e. in the form of reserves)? If yes, please elaborate on how they work?

No, this is not the case in Denmark. To date, Denmark has neither implemented a strategic reserve, nor a capacity market.

Section 2 - Balancing markets

5. What incentives do balancing responsible parties have to reduce their imbalances (or help the overall system to be in balance)?

All balancing responsible parties must pay the imbalance price if they have imbalances. See section 5.2.4.

6. Are all market participants exposed to the TSO's imbalance settlement rules? Are the terms/rules of the imbalance settlement the same for all balance responsible parties?

All balance responsible parties are subject to the TSO's imbalance settlement rules, and these rules are the same for everyone. See section 5.2.4. Energinet organises balance responsibility for a limited number of small renewable self-generators in line with article 5, stk. 1, in the electricity market regulation. The



balancing of power production from these installations is tendered and handled by a third party.

7. How are the costs for procuring balancing services translated in imbalance settlement prices?

The imbalance price is set by taking the maximum/minimum of the mFRR prices or the volume-weighted aFRR price. This imbalance price is intended to cover the costs of energy activation for balancing. See section 5.2.4.

8. Are the full costs of balancing actions attributed to the balance responsible parties through the imbalance settlement price?

The costs of energy activations (aFRR and mFRR) are reflected in the imbalance price. However, most of the costs for purchasing capacity for balancing are covered by a system tariff. See section 5.2.4.

9. Has the Member State considered introducing an administrative scarcity pricing mechanism as referred to in Article 44(3) of EBGL?

No, but Denmark is following the issue closely and will revisit the issue following full implementation of the Nordic Balancing Model (NBM). See section 5.2.5.

10. How is the imbalance settlement price calculated for a balancing period in which the TSO has to disconnect one or more consumers involuntarily?

The imbalance price will still be calculated by taking the maximum/minimum of the mFRR prices or the volume-weighted aFRR price. However, in this situation, the imbalance price will end up being the maximum price. See section 5.2.4.

11. What is the estimated value of lost load in the Member State? Please provide a copy of any study providing a basis for this estimate.

The estimated VoLL (2025) is 176kr/MWh, see section 4. The underlying analysis can be accessed via the following link <https://ens.dk/forsyning-og-forbrug/den-danske-elforsyningssikkerhed>.

12. Are balancing reserves procured through a competitive process? Does the TSO procure (a portion of) its balancing reserves close to real time (day-ahead)?

All balancing reserve capacities are purchased through a competitive process, with most reserve capacities being purchased before day-ahead gate closure. See section 5.2.2.



13. Can demand side participants provide balancing services?

Yes, the demand side can participate on equal terms with production when it comes to providing balancing services. See section 5.4.3.

14. Are there any formal or informal rules or requirements that limit generators' ability to freely price their offers in balancing markets?

No, there are no requirements that limit a generator's ability to price their bids in the balancing market. However, they must be able to document, why their bid price is fair and not market manipulation. See section 5.4.2.

Section 3 - Demand-side response

15. Are all types of demand-side response eligible to participate in the wholesale electricity markets (including day-ahead and intraday) as well as the balancing/ancillary services markets?

Within the boundaries of the relevant requirements set by NEMOs, all types of demand-side response can participate in all markets. See section 5.4.3.

16. Can demand-side response participate in markets both via individual players and via aggregators?

Yes. No distinctions are made between direct and indirect participation, and participation via aggregators is therefore possible, subject to the fulfilment of the relevant market requirements set by NEMOs. See section 5.4.3.

17. Are there any exemptions from network or energy-related costs as well as surcharges (RES, CHP, capacity mechanisms, etc) for specific classes of consumers which might affect demand response incentives?

The TSO offers permanent flexible connection agreements to consumers against a tariff reduction, DSOs offer these types of tariffs to producers and customers connected to the net a 10 kV levels or above against reduction of the connection fee. Methodologies for intermittent flexible connection agreements giving non-firm access pending net development are under development and will be subject to approval by the Danish National Regulator. See Section 5.4.6.

Denmark expects the relationship between flexible connection agreements and local flexibility markets to be addressed in the upcoming network code on demand response, which will be adopted in the form of a Commission Regulation and thus will be directly applicable in Denmark.



18. What percentage of customers is provided with smart meters (please specify it separately for the following groups of customers: a) households, b) business customers, c) industrial users)

There has been a 100 pct. rollout of smart meters to all customers in all customer segments. See section 5.4.4.

a. 90 %.	X (100 pct. for all groups of customers)
b. 70-90 %	
c. 40-70 %	
d. 20-40 %	
e. Less than %	

19. Are all the smart meters capable of metering and transmitting at least hourly metering values and do data management systems enable suppliers to settle customers on the basis of at least hourly metering values (i.e. against at least hourly spot market prices, for the purpose of dynamic pricing)?

Yes, in terms of metering this is ensured by article 4 in ministerial decree no 1215 of 20/11/2024. See section 5.4.4 for more detail, also on 15-minute-interval metering (with link to the ministerial decree in fn. 29).

DataHub is supporting hourly metering and has been updated to also support 15-minute metering. See section 5.4.5. for information on DataHub.

20. Do customers in the retail market have access to a dynamic price contract linked to wholesale spot market prices?

Yes, this follows from § 21 in ministerial decree no 1728 of 30/12/2024. See section 5.5.1 (with link to ministerial decree in fn. 36).

Section 4 - Retail Markets: Regulated prices

- Does the Member State have a system of regulated electricity prices for final customers?
(If yes, see questions 21-29)



No, there is no system of regulated prices in place in Denmark for final customers.

However, in order to prevent customers from being cut-off from energy supply in case their supplier files for bankruptcy or stops operations for other reasons, there is a mechanism in place, which ensures continued supply under an intermittent contract with at product, the price of which is set at the spot-price plus an add-on determined annually for this specific type of products by the regulator. In the period from 2021 to date⁵⁰, there have been 8 instances where in all 2057 customers were assigned to another supplier under the mechanism. See section 5.5. for more detail.

21. What is the percentage of total demand supplied under regulated prices?
22. Which customer groups are eligible for regulated prices?
23. What is the percentage of demand per customer group supplied under regulated prices?
24. Are there market-based energy offers which are more attractive than the regulated prices available to all customers, including regulated customers?
 - a. Are regulated prices set at a level where effective price competition among suppliers can occur?
 - b. What were the regulated prices for the different customer groups in 2018 in c/kWh?
 - c. Please provide examples of available competitive market prices that compete with the regulated prices and their comparable price level in c/kWh?
25. What is the methodology for calculating each of the regulated retail prices currently in place? Who sets the methodology? Who approves the prices?
26. Has there been any significant switching of regulated customers to alternative suppliers?
 - a. Please provide the share of customers under regulated prices in each customer category for the last five years consecutively.
27. How are the suppliers supplying regulated customers selected? How is non-discrimination in the selection process ensured?
28. What are the measures planned to fully effective market-based pricing of electricity for all final customers, and what is the timeline?
29. What is the timeline for price deregulation? Is it due to happen before the planned introduction of the capacity mechanism?

Questions 21 -29 are not applicable.

⁵⁰ 22 May 2025.



Section 5- Interconnection

30. Has the Member State developed interconnection with the view to reaching at least its interconnection targets as referred to in point (d) of Article 4 of Regulation (EU) 2018/1999?

Yes, the currently interconnectivity level is 49.1 percent and is expected to be around 30 percent in 2030. See section 5.7.1.

31. Please describe the amount of interconnection capacities available for trading from and to the Member State and their current utilization.

Today there is a total of 8.854 MW of interconnector import capacity available for market trading as per section 5.7.1.

32. Are there currently administrative import and/or export restrictions on interconnectors limiting trade with neighbouring countries? If yes, please explain what is the impact of such restrictions on the market.

The only current interconnector restriction is on the Viking Link cable to UK, which is limited from 1.400 MW to 1.100 MW in the import direction as per section 5.7.1.

33. Are there any internal network congestions? What is the annual cost of redispatching/countertrading in the Member State? Are there planned or ongoing network reinforcement measures?

Currently there are no structural grid congestions in Denmark. However, grid congestions are seen more often under specific circumstances. Mainly driven by increased generation and consumption, such specific instances of congestion are expected to be more present in the future. In order to stay at the forefront of developments, and to ensure sufficient grid capacity, several grid enforcements and build-outs are planned and under development. See section 5.7.2, table 6, for a description of the main grid enforcements planned.

In 2023, Energinet applied redispatch/countertrade at a total value of 1.4 billion DKK. The redispatch/countertrade is primarily related to structural countertrade at the German-DK1 border, which is initiated and paid for by the German TSO TenneT, and relates to internal congestions in Germany and not in Denmark (DK1). The approach to structural countertrade follows a fixed methodology, approved by the Danish Utility Regulator. See section 5.7.2.