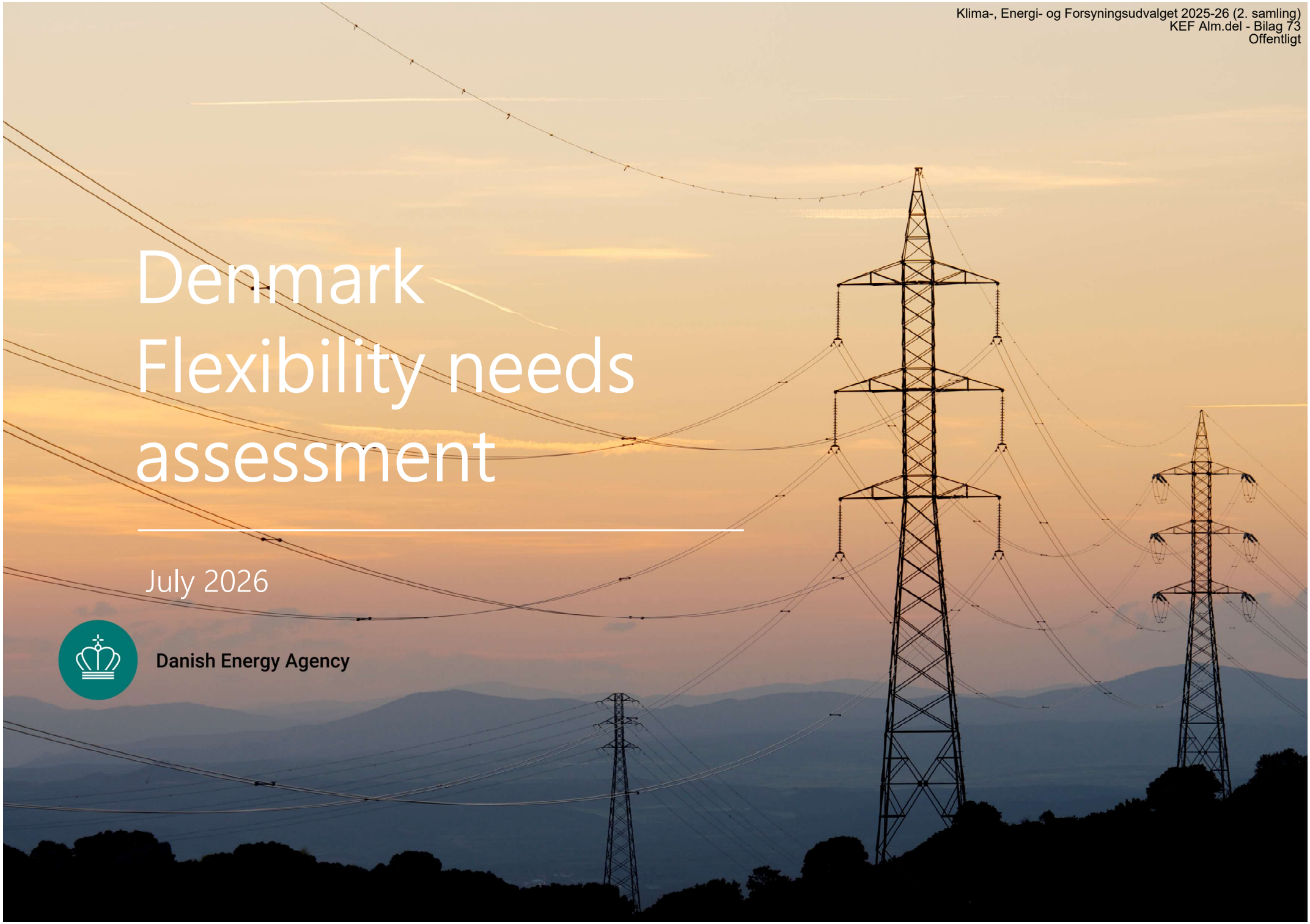
Klima-, Energi- og Forsyningsudvalget 2025-26 (2. samling)
KEF Alm.del - Bilag 73
Offentligt



Denmark Flexibility needs assessment

July 2026

Danish Energy Agency

Table of contents

Summary **2**

Key findings 2

Barriers to flexibility, regulatory recommendations and actions 4

Chapter 1: Introduction **5**

Chapter 2: Methodological aspects **6**

2.1 Data sources for system needs 6

2.2 Data sources for network needs 6

2.3 Target years considered 7

2.5 Modelling approach 7

2.6 Portfolio of flexibility resources available 8

Chapter 3: Results of flexibility needs assessment **10**

3.1 System-wide flexibility needs 10

3.2 Network flexibility needs 17

Chapter 4: Barriers and mitigating measures **20**

4.1 Barriers to promote flexibility 20

4.2 Digitalisation 23

Til arbejdsbrug/Restricted

Summary

The flexibility needs assessment (FNA) seeks to identify the flexibility needs in the Danish electricity system driven by increasing renewable generation, electrification, forecast uncertainty, congestion, and the aim of integrating and utilizing more renewable energy while maintaining system security. The FNA assesses both system needs (balancing, ramping, and renewable integration) and network needs (congestion management), highlighting the importance of non-fossil flexibility resources such as demand response, storage and interconnectors. The results are reported for each of the two Danish bidding zones; DK1 located in the western part of the country and DK2 located in the eastern part of the country.

Key findings

Renewable Energy Sources (RES) curtailment

RES curtailment refers to limiting the generation or transmission of renewable power for system operational reasons or grid-capacity reasons. RES curtailment is expected to increase towards 2035 in Denmark in both bidding zones. A total energy of 6.6 TWh and 5.1 TWh of RES production is estimated to be curtailed in 2035 in bidding zone DK1 and DK2 respectively. This corresponds to approximately 5 % and 10 % of total estimated RES production using the same *annual analysis assumptions for Energinet* (AF23). In periods with exceptionally high wind and solar production potential and low demand, peak curtailment reaches 21.0 GW for DK1 and 10.7 GW for DK2 in 2035.

Table 1 Key findings for RES curtailment across weather scenarios

	Target Year	Max [GW]	Total duration [h]	Energy [TWh]
Total RES curtailment	2030	DK1: 14.8 DK2: 6.8	DK1: 1,115 DK2: 1,009	DK1: 4.9 DK2: 1.2
	2035	DK1: 21.0 DK2: 10.7	DK1: 1,396 DK2: 2,186	DK1: 6.6 DK2: 5.1

RES Integration

Towards 2035, an increased share of the electricity demand is expected to be covered by RES production. From 2030 onwards, the RES integration target is to cover 100% of electricity demand by RES. In 2035, 89% of the demand in DK1 and 81% in DK2 is estimated by the Danish TSO, Energinet, to be covered by RES without applying additional flexibility to the system.

Ramping needs

Ramping needs refer to the flexibility required to manage changes in the residual load (demand minus RES generation and must run generation). Ramping needs arise when residual load changes require flexible resources to adjust their output within given time constraints.

Typically, hourly ramping needs in DK1 and DK2 follow a distinct pattern. In the morning, the ramping needs tend to be downwards due to the increase in solar production and vice versa in the evening where upward ramping needs occur due to decline of solar production and increase in demand. Even though ramping needs do occur towards 2035, almost no uncovered ramping needs were identified in the analysis. Thus, the existing reserves at Energinets disposal can cover the estimated ramping needs.

Short-term flexibility needs

Short-term flexibility needs will increase from 2030 to 2035 due to the growing amount of renewable energy (RE) generation, which is more weather-dependent than traditional generation. However, the increase is expected to cause fluctuations of only 1–2 GW, which is assessed to be managable using the existing reserve capacity.

Short-term flexibility needs represent the amount of flexibility needed to cover unexpected variations in demand and RES generation (forecast errors). Short-term flexibility needs are defined as the 99.9 and 0.1 percentile of residual load forecast errors. It covers market flexibility and TSO balancing from day-ahead to real-time.

Til arbejdsbrug/Restricted

Summary

In general, the applied sudden forecast errors (1-hour forecast errors) resulted in lower short-term needs than the longer term forecast errors measured in the day-ahead (D-1 forecast errors). No downward uncovered short-term flexibility needs were identified in either bidding zone across both target years, as sufficient downwards flexible resources and reserves are available. In the upward direction, only 1-2 hours with uncovered flexibility needs were estimated in each bidding zone only for 2030.

DSO network needs

Network flexibility needs are the activations required on the transmission or distribution grid to manage congestion and voltage constraints and maintain secure network operation. Flexibility needs are in the Danish FNA report also defined as minor congestions in the TSO and DSO grids where flexible solutions, such as flexible connection agreements, could be a relevant and cost-effective solution to traditional grid expansion.

For the DSOs, total network flexibility needs in terms of capacity are estimated at between 100 and 200 MW across both target years, directions and bidding zones. Whereas flexibility needs based on consumption primarily triggers in the winter months, the flexibility needs based on production can arise throughout the entire year due to the expected large roll-out of both solar and wind production in Denmark.

For the TSO network needs, 30 transmission lines in the TSO grid across the two Danish bidding zones will reach congestion levels of up to 120% of the maximum tolerated capacity in 2030 and 21 transmission lines in 2035.

This results in a theoretical minimum network flexibility need of 1.7 GWh across 2030 in the DK1 bidding zone and 1.4 GWh in the DK2 bidding zone. For 2035 the theoretical minimum network flexibility need is estimated to be 7.1 GWh in DK1 and 1.1 GWh in DK2. In comparison, the total electricity consumption in Denmark for AF23 is estimated to be 127 TWh in 2035. The estimated network flexibility needs are expected to be significantly higher, since the flexibility services cannot be assumed to be optimally located relative to the grid constraints. In addition, the meshed structure of the grid and the fact that a single service cannot relieve all connections simultaneously further increase the need.

Table 2 below provides an overview of the identified uncovered flexibility needs due excess local production congestion (downward flexibility needs). Note that TSO network needs cannot take simultaneity into account and is thus underestimated. Further, TSO network needs do not take DSO network needs into account and thus, the numbers cannot be compared directly.

Table 2 Summary of ramping needs, short-term needs and network needs in 2035

Type	Flexibility need	Indicator	Max. uncovered capacity [GW]
System needs	Ramping needs	Downward uncovered ramping need	DK1: 0 DK2: 0.3
	Short term needs	Downward uncovered short-term needs	DK1: 0 DK2: 0
Type	**Flexibility need**	**Indicator**	**Total uncovered energy (GWh)**
Network needs	DSO network needs	Downward DSO network flexibility needs	DK1: 19.6 DK2: 29.5
	TSO network needs	Downward TSO network flexibility needs	DK1: 7.1 DK2: 1.1

In terms of ramping needs and short-term flexibility needs (system needs), the existing reserves are deemed sufficient to cover the identified flexibility needs.

In terms of network needs, non-wire alternatives could provide solutions to the identified congestions. However, the data is not detailed enough to provide indication if the non-wire alternative is the more cost-effective solution compared to traditional grid expansion.

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Flexibility resources are expected to be available through further development of tariff methodologies and flexible connection agreements. Moreover, the large capacity from interconnectors and the ongoing development of aggregators – acting independently in the future or through an intermediary (balancing responsible party) – will further increase the flexibility potential.

Denmark has a full roll-out of smart meters installed since 2021 and that gives potential to share and coordinate meter data that provide the granular consumption and generation data needed to identify, quantify, and activate flexibility resources at specific locations in the network.

Barriers to flexibility, regulatory recommendations and actions

The analysis found no major barriers for participating in energy, balancing and ancillary services in DK1 and DK2. Although there are still barriers that hinder harvesting more flexibility. These barriers relate i.a. to the following:

- Lack of physical and digital infrastructure and lack of data transparency that enables aggregation and smarter utilization of flexible units.
- Lack of incentives to provide congestion management. For example, the need for more and different flexible connection agreements and the further development of local flexibility markets that currently does not exist in Denmark.
- Potential bias in regulatory incentives for system operators to prefer grid expansion over non-wire alternatives.
- Lengthy process and complex administration. For example the lengthy process of grid connection due to lack of grid capacity.

Denmark is aware of these barriers and has taken different actions to mitigate and remove barriers. Some barriers are more structural - such as the lack of grid capacity - and will take time and comprehensive initiatives to handle others are less complex – such as enhancing data transparency.

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Chapter 1: Introduction

The Danish Energy Agency (part of the Danish Ministry of Energy, Climate and Utilities) is the designated authority in Denmark responsible for drafting and submitting the flexibility needs assessment (FNA) covering the next 5 to 10 years (2030 and 2035), focusing on flexibility requirements in the Danish electricity system to support renewable integration and grid stability. This is mandated under article 19e in the Electricity Market Regulation.

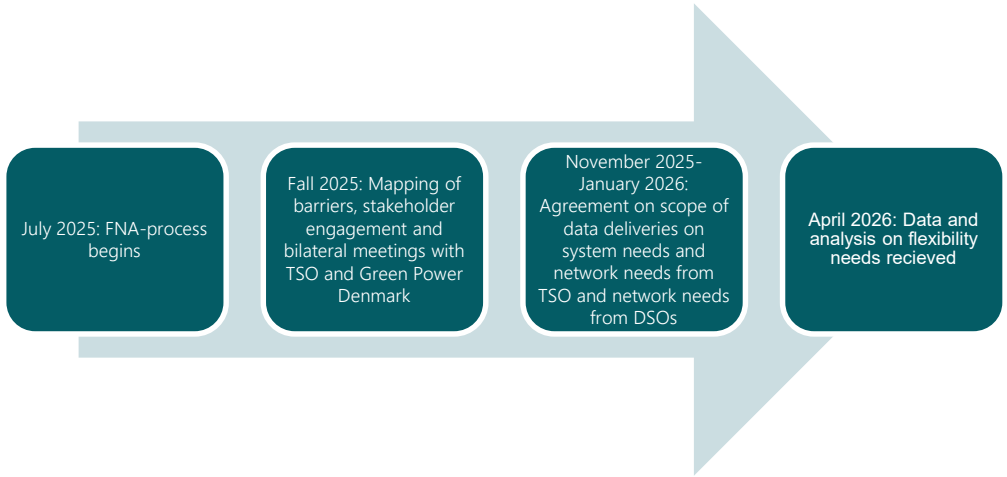
The report relies on data and analysis provided by the Danish transmission system operator (TSO), Energinet, and the 16 distribution system operators (DSO) that have voltage levels that interfaces with the TSO-grid at Energinet. Green Power Denmark, as the representing industry association for Danish DSOs, has helped facilitate, coordinate, and ensure quality in the received data. The cooperation started in the summer of 2025 when the FNA methodology from ACER was published. The Danish Energy Agency would like to thank Green Power Denmark, the 32 Danish Distribution System Operators and Energinet for their cooperation in providing data, dialogue and valuable insights for the preparation of the FNA.

The Danish Energy Agency engaged in dialogue with Green Power Denmark and Energinet continuously throughout the second half of 2025 in order to understand which data on flexibility needs that were attainable within the strict timeframe.

Parallel to the dialogue, the Danish Energy Agency undertook a broad stakeholder engagement in the attempt of mapping barriers for flexibility in the Autumn of 2025. The main findings of this engagement have been valuable in order to finalize chapter 4 in the report.

In order for the Danish Energy Agency to realistically finalize the report before the deadline, the TSO and the DSOs sent data on flexibility needs in April 2026.

Figure 1 – Timeline for completing the flexibility needs assessment



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Chapter 2: Methodological aspects

This chapter outlines the methodological framework underpinning the flexibility needs assessment, ensuring alignment with the FNA Methodology. It begins by specifying the data sources used to estimate system needs and network needs. Furthermore, the target years considered for simulations are elaborated. The modelling approach details the analytical methods employed for the flexibility needs calculation and finally any additional data or analyses adopted by the Member State, if applicable. Together, these elements constitute the methodological framework to evaluate the national flexibility needs.

2.1 Data sources for system needs

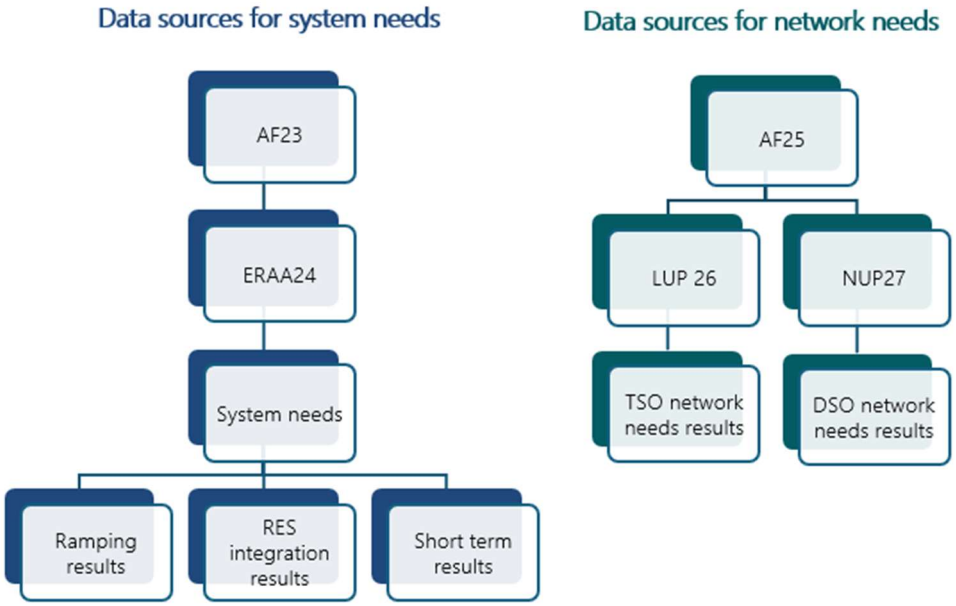
For estimating system needs, ERAA24 has been used as the only data source. ERAA24 was used since it was the latest public data source available in the Autumn of 2025. Danish data for ERAA24 consists of the *Danish Energy Agency's annual analysis assumptions for Energinet,* containing data for the year 2023 (AF23) as well as international input from . The analysis assumptions have been developed to support the TSO's planning of future electricity and gas transmission infrastructure. The data consists of developments in electricity generation capacity, interconnectors, electricity demand, gas production and consumption, as well as hydrogen production and demand. In preparing these assumptions, the Danish Energy Agency takes into account overall technological developments and assumes that political objectives and ambitions will be achieved, even where specific policy measures have not yet been adopted. In contrast to Climate Projections, the Analysis Assumptions are thus not based on a Frozen Policy scenario.

2.2 Data sources for network needs

For estimating network needs, the dataset of AF25 has been used in parallel with the upcoming ten-year network development plan for Energinet and the 32 Danish DSOs (LUP26 and NUP27, respectively). As shown in figure 2, AF23 and AF25 assumptions are used as the dataset for either system needs or TSO/DSO network needs. The two datasets vary for these two years mainly according to assumptions related to consumption profiles of PtX, datacentres and CCS. Therefore, the two analyses can be difficult to compare since the datasets are based on different years and assumptions.

Energinet has used data from the upcoming national ten-year-development plan (LUP 26) whereas the DSOs have estimated network needs using data from the upcoming network development plan DNDP (NUP 27). Energinet and the DSOs did not have an existing data framework for estimating flexibility network needs in previous editions of their development plans. Thus, the estimated network needs rely on the most recently available datasets in relation to the overall grid planning for DSO and TSO. In agreement between Energinet and the Danish Energy Agency, it was deemed not possible within the allocated timeframe for this iteration of the FNA to develop a solution that fully complies with these aspects of the FNA Methodology. Thus, these estimations of TSO network flexibility needs are based on existing data estimations from the upcoming ten-year-development plan (LUP 26).

Figure 2 – Data sources for the flexibility needs assessment



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2.3 Target years considered

The selected target years for this FNA are 2030 and 2035. 2030 was set as the common European policy target year and 2035 was chosen as the national target year in order to consider a 5-10 year time horizon as mandated in the Electricity Market Regulation. The two target years also work in accordance with the planning horizons used in ERAA24 and the network development plans for TSO and DSOs.

2.4 Scenarios

For the scenarios of system needs, ERAA24 without capacity mechanism has been used.

2.5 Modelling approach

Energinet has selected the following three climate years for estimating system needs using the pre-existing ERAA24 model:

1. WS14
2. WS25
3. WS28

The selected climate years are also used in the economic viability assessment (EVA) in ERAA24. To limit the number of simulations, the Danish Energy Agency has agreed with Energinet to limit the number of climate years as described in the FNA methodology.

The estimation of RES integration is assessed against Denmark's national target of covering 100% of electricity demand with RES by 2030.

To compute additional flexibility resources for system needs, the RES integration needs are described by showing the additional capacity and duration needed to fulfil a certain level of RES integration.

With its many interconnectors (total capacity of 10.3 GW in 2024 corresponding to approximately 150 % of Danish peak consumption in the same year), Denmark is a transit region, and consequently there is large flexibility resources that can be imported/exported rapidly. For the purpose of this analysis, Energinet has accounted for the dependency on other areas and applied a 50% availability factor for the interconnector capacity reflecting a more realistic estimate of available ramping flexibility. This assumption states that at least half of the areas Denmark are connected to through its two bidding zones, have a ramping need in the same direction in the given period. RES production resources are also constrained, with an availability factor of 80%, as several older installations are unable to provide flexibility due to limitations in their control systems.

Short-term flexibility needs are estimated as the 99.9 percentile and the 0.1 percentile residual load forecast error. Residual load forecast errors are the sum of forecast errors on RES and demand. Forecast errors are calculated probabilistically on statistical forecast errors compared to real operation.

2.5.1 Network needs for DSOs

Network needs for DSOs are calculated for all transformer substations (e.g. 50/10 kV and 60/10 kV) connected to the 50 kV and 60 kV grids. Lower grid levels were not considered in the analysis in order to make the aggregation for national network flexibility levels more feasible. The 50/60 kV grid is currently operated by 17 out of the 32 DSOs in Denmark. The remaining grid companies are for the purpose of this exercise considered underlying companies that report their needs to the higher voltage level grid company.

Each individual company prepares capacity need forecasts for every transformer substation within its own grid area based on:

- The latest available data on power demand and energy consumption (currently 2025 data)
- Analysis Assumptions for Energinet (AF25)
- Local deviations from AF25
- Weighted pipeline lists
- Local knowledge
- The access to transmission grid capacity and capacity in the 50 kV and 60 kV is attainable at the local geographical level.

Flexibility needs (measured in MW and MWh) at each transformer substation are calculated as the upward or downward regulation requirement needed to reduce the maximum station loading to 100%. If the maximum station loading exceeds 120%, the need is considered not solvable through flexibility measures.

Til arbejdsbrug/Restricted

Flexibility needs (measured in MWh) are calculated by summing the energy during the hours in which the load exceeds the maximum load under an N-1 condition.

The grid company's total flexibility need across the entire grid area is determined while considering, among other things, simultaneity between substations and the interconnected structure of the grid.

Flexibility needs arise at transformer substations where the loading level is between 100% and 120%. In most cases, a rapid (and continuing) increase in capacity demand is observed in the area. This means that a substation will typically only experience overloading between 100% and 120% for a very short period (1–2 years), after which grid expansion (reinforcement) will still be required. As a result, a flexibility need identified for 2030 will typically have been resolved through grid expansion (reinforcement) before 2035.

2.5.2 Network needs for TSO

Network needs for the TSO are estimated in similar fashion where flexibility services can mitigate overloads of up to 20% in an intact grid without considering conditions where back-up grid supply is available (referred to as the N-1 condition). In other words, loadings between 100% and 120% in an intact grid, without considering the N-1 condition, are expected to be manageable through flexibility services rather than grid expansion. The Danish TSO, Energinet, operates in two bidding zones (DK1 and DK2) with two main grid levels; 400 kV and 150 kV for DK1 and 132 kV for DK2, respectively.

The assessment is intended to cover the coming 5 to 10 years, and therefore two target years have been selected: 2030 and 2035.

The methodology for estimating the need has been developed through annual simulations for 2030 and 2035, based on the projections provided in the 2025 analysis assumptions. In an annual simulation, every hour of the year is simulated individually as its own consumption/production balance. This means that an overload energy value is calculated per connection for each of the 8,760 individual balances in the two target years.

Subsequently, the connections that meet the following two criteria are selected:

1. The connection experiences overload energy for at least one hour.
2. The connection never exceeds a loading of 120% in an intact grid without considering N-1.

The selected connections, their associated overload energy, and the number of hours with overload energy are then compiled.

Due to the different starting points in the analysis assumptions for system needs and network needs (see Chapter 3) and the lack of time to collect network needs prior to the preparation of system needs, it has not been possible to carry out a representative fine-tuning.

2.6 Portfolio of flexibility resources available

Below is a summary of potential non-fossil flexibility resources in Denmark, which can fulfil the flexibility needs both at transmission and distribution levels.

- Interconnector: Interconnectors are crucial to the Danish electricity grid because they link Denmark's power system with neighboring countries (Sweden, Norway, UK, Netherlands and Germany), enabling electricity trade and enhancing grid stability. They allow Denmark to export excess renewable energy, particularly wind power, and import electricity when domestic generation is low. In 2024, the total import capacity from interconnectors amounted to 10.3 GW corresponding to 54 % of Denmark's total domestic installed capacity.
- Battery Energy Storage Systems (BESS): Batteries can store electricity when production peaks and the grid is under pressure. This reduces the need for curtailment of RE.
    - Co-location batteries: Co-location of batteries with renewable energy installations (such as solar and wind) maximizes flexibility in the electricity grid. The battery stores surplus electricity, reduces curtailment, and provides balancing services, ensuring better utilization of the existing grid connection and creating new revenue opportunities across multiple markets.
    - Stand-alone batteries: Stand-alone facilities are characterized by being established without any connection to other electricity consumption or electricity production, and therefore operate independently of them. Stand-alone batteries can help ease grid bottlenecks by acting as flexible buffers in the electricity system. They can store excess electricity when the local grid is congested and release it later when demand is lower, helping to smooth out peaks in both production and consumption. This improves overall grid flexibility and can reduce short-term congestion, especially in areas with limited transmission capacity. However, under the current connection and tariff

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framework in Denmark, batteries will often occupy grid capacity corresponding to their maximum power demand at the same time as other grid users. Consequently, batteries may risk taking up scarce grid capacity and crowding out other projects that contribute to the electrification unless they can connect and operate on grid-friendly terms and conditions.
    - stand-alone batteries do not remove structural grid constraints—they mainly shift energy in time and support more efficient use of existing infrastructure.

- **Electric vehicles:** Smart charging of electric vehicles means that cars charge when electricity production is high and postpone charging during periods of low supply. This turns electric vehicles into flexible resources that can take advantage of fluctuating electricity prices. In Denmark, vehicle-to-grid technology is also being developed, allowing car batteries to act as mobile energy storage. During peak demand periods, electric vehicles can supply electricity to homes or even feed power back into the grid when prices and demand are high. Vehicle-to-grid is still under development in Denmark.

- **Electric boilers and heat pumps:** Electric boilers and heat pumps are both used in district heating systems and can help balance the electricity grid by adjusting their power consumption. Electric boilers are generally more flexible than heat pumps because they can be switched on and off very quickly. This makes them well suited for absorbing surplus wind and solar power during periods of low electricity prices. Heat pumps, on the other hand, are more energy efficient because they produce several units of heat from one unit of electricity. However, they are less flexible in operation, as frequent start-stop cycles can reduce efficiency and increase wear on the system. In practice, both technologies are interruptible and through flexible connection agreements they can contribute with flexibility in situations where grid capacity is limited.

- **Power to X (PtX):** PtX utilizes the process of taking renewable electricity (from sources like wind or solar) and water to produce green hydrogen through electrolysis. PtX can in principle functions as flexible consumers that can ramp up production when there is a surplus of wind and solar energy, and scale down when prices are high. However, some PtX developers may be subject to financial agreements with PtX off-takers that can force the PtX-plant to run in periods of low excess RES limiting the flexibility potential.The hydrogen can be stored or converted into green fuels. PtX and hydrogen pipeline is under development in Denmark and is expected to provide energy to the Danish energy system from 2030.

- **Biomethane:** Biomethane provides flexibility by offering controllable, fuel-stored generation that can be dispatched, ramped, or reserved to support balancing, adequacy, and congestion management needs in the electricity system. Denmark is producing increasing amounts of biomethane in order to phase-out natural gas. According to latest climate prognosis by the Danish Ministry of climate, energy and utilities (Klimafremskrivning 2026), the gas distribution and transmission grid is expected to be dominated by biomethane origin in 2035. This will in the longer term provide a non-fossil flexible resource that can alleviate periods of low RES production and high consumption.

Implicitly promoted flexibility resources through payment products

- **Flexible grid connection agreements:** A contractual model within the electricity supply sector in which a consumer voluntarily agrees to reduce or interrupt its electricity consumption or electricity production during periods of strain on the power grid. In return, the TSO lower the electricity tariff and the DSO lower the cost of grid connection.

- **Time of use tariffs (ToU):** Is a tariff model for electricity in which the price of electricity varies depending on the time of day – and sometimes also by day of the week or season. The purpose is to shift electricity consumption away from periods of high load on the power grid.

- **Geographically differentiated tariffs:** On 1 January 2023, a new method of producer payment came into force. This involves a differentiated feed-in tariff depending on whether the producer is located in a consumption or production surplus area. The method also implies that new electricity generation installations will in future have to pay a one-off contribution when connected to the transmission or distribution grid. This standardized connection payment is also geographically differentiated.

Til arbejdsbrug/Restricted

Chapter 3: Results of flexibility needs assessment

Chapter 3 outlines the estimated flexibility needs received by the Danish TSO and DSOs. Note that system needs and network needs should be assessed individually as the analyses are based on different analysis assumptions as described in chapter 2.

3.1 System-wide flexibility needs

3.1.1 RES integration

The RES integration levels are estimated using the minimum effectively integrated (i.e., non-curtailed) RES generation relative to the total electricity demand in any given hour (market time unit/MTU). As seen in table 1, the RES integration levels are expected to increase towards 2035 in both bidding zones.

Table 1 – RES Integration

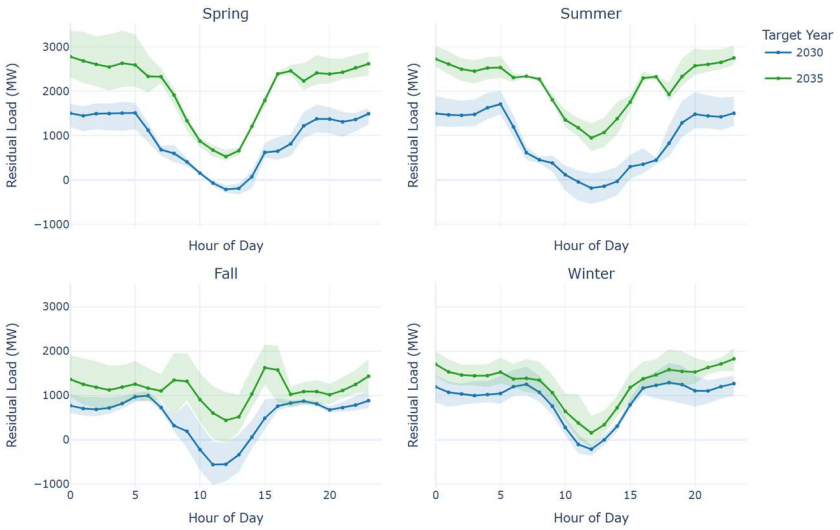
Bidding zone	Year	RES Integration
DK1	2030	69.9 %
DK1	2035	89.0 %
DK2	2030	67.4 %
DK2	2035	81.3 %

3.1.1.1 Characterisation of residual load time series

Residual load in the FNA Methodology is defined as difference between electricity demand and RES (taking other must run power production capacities into account). Due to a combination of increased RES generation and decreased demand, the *duck curve* can be seen in figure 2 where the residual load lowers in the middle of the day (between 10 am and 2 pm). The effect becomes clearer during spring and summer where solar production is so high, that residual load becomes negative and has the potential to either be stored or exported to other bidding zones (if the available grid capacity is adequate).

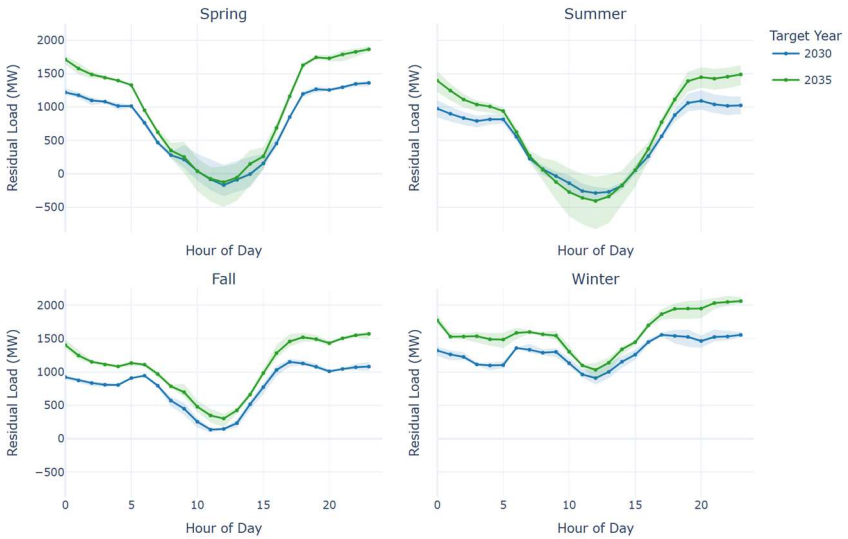
The residual load is estimated to be higher in 2035 compared to 2030 due to increased electrification, see figure 3 and 4. The lines estimate the average residual load throughout the hours of the day in each season for 2030 and 2035. The shaded green and blue areas depict the variance across the three weather scenarios (see section 2.5). The increased variance during Autumn and Winter is due to increased wind production which by nature is more unpredictable.

Figure 3 – Hourly average residual load characteristics for bidding zone DK1



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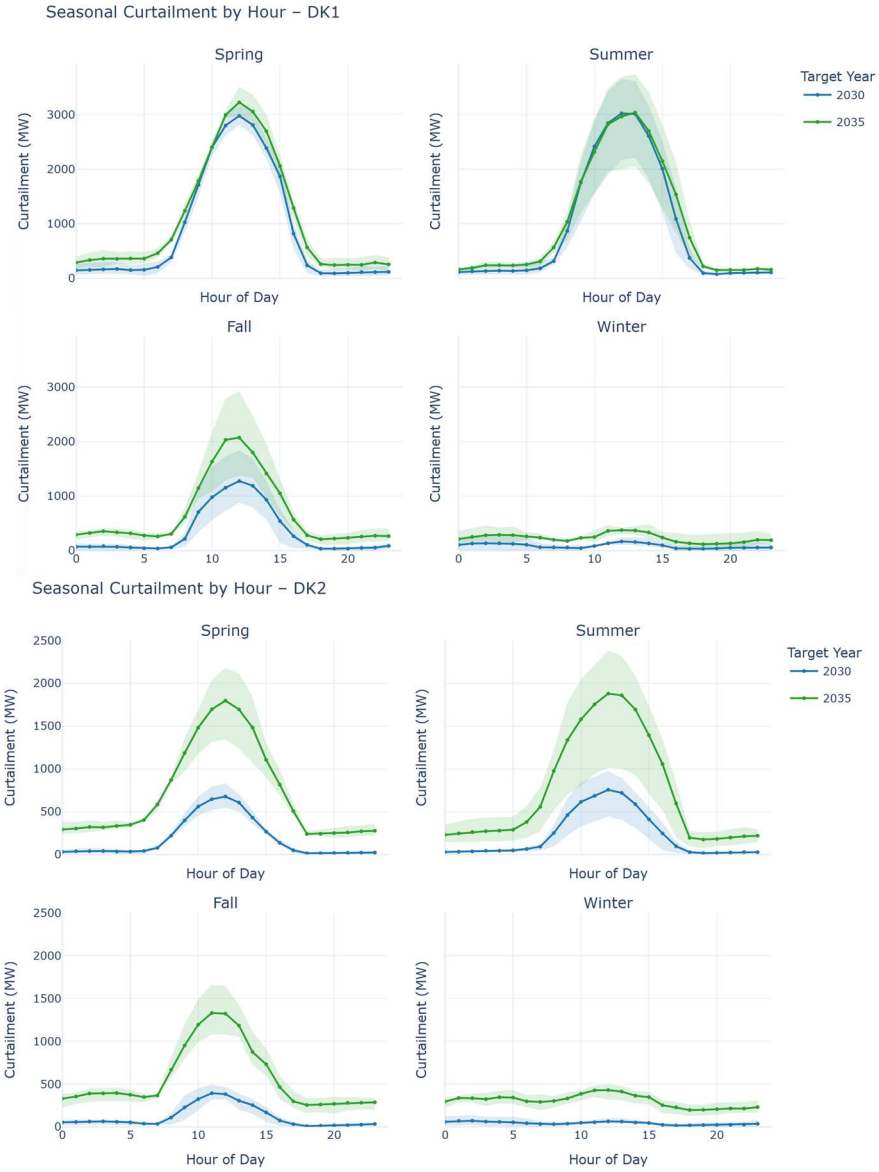
Figure 4 - Hourly average residual load characteristics for bidding zone DK2



3.1.1.2 Characterisation of RES generation curtailment

The increasing deployment of RES, and especially solar energy, is also estimated to contribute to increased curtailment in the middle of the day (between 10 am and 2 pm) during spring and summer, see figure 5. The effect stems from the combined effect of increased solar production and lower electricity demand due to the warmer weather during sunny days in spring and summer. Almost no curtailment takes place during the winter months. Curtailment is expected to increase from 2030 to 2035 due to increased instalment of RES – especially in the bidding zone DK2.

Figure 5 - Hourly and seasonal RES generation curtailment



Til arbejdsbrug/Restricted

3.1.1.3 Flexibility needs for RES integrations

The FNA report will estimate the flexibility needs in order to meet a certain level of RES integration. RES integration can be facilitated through the use of RES curtailment and exported electricity, as exported electricity is assumed to be generated from renewable sources.

As shown in table 2, the flexibility needs for RES Integration decreases substantially towards 2035 as the demand for electricity increases. By 2035, the flexibility needed to achieve 100% coverage of demand by RES is 5 GW (1,000 GWh) and 3 GW (1,000 GWh) for DK1 and DK2 respectively.

Table 2 - RES integration needs

Bidding zone	Year	RES Integration without additional flexibility implementation	Additional flexibility needed to achieve 100% coverage of demand by RES
DK1	2030	69.9 %	>15 GW (>5,000 GWh)
DK1	2035	89.0 %	5 GW (1,000 GWh)
DK2	2030	67.4 %	>15 GW (>5,000 GWh)
DK2	2035	81.3 %	3 GW (1,000 GWh)

3.1.1.4 Flexible resources needed to meet the uncovered needs

Denmark can accommodate future uncovered flexibility needs through a combination of 1) interconnectors, 2) demand response, especially through future large electricity consumers such as district heating, electric vehicles and PtX, 3) continuous adaptation of balancing reserves to evolving system needs, 4) electricity storage such as lithium-ion batteries and 5) development of tariffs to provide incentives to increase electricity consumption in periods of large surplus of RES, further the use of non-wire alternatives such flexible connection agreements and time-of-use tariffs.

3.1.2 Ramping needs

Ramping needs are defined as the excess available resources after residual load ramps. Thus, whenever a shift in residual load occurs either from a change in RES generation or demand.

Typically, ramping needs in DK1 and DK2 follow a distinct pattern. In the morning, the ramping needs tend to be downwards due to the increase in solar production and vice versa in the evening where upward ramping needs occur due to decline of solar production and increase in demand.

Spring, summer and autumn seem to be the periods with largest average volatility over the hours of the day. Solar has decreased magnitude during winter (≈ 50% of summer).
The violin plots in figure 6 and figure 7 show ramping needs for DK1 and DK2 across all three weather scenarios. Uncovered ramping needs are depicted as the ramping needs below the 'No violation'-line. The ramping needs above the 'No violation'-line are ramping needs which can be covered by existing available flexibility.

Large volumes of renewable energy resources and interconnectors are available for downward regulation and, to a considerable extent, also for upward regulation. Thermal generation units are available to a lesser degree, while energy storage facilities are often capable of providing both upward and downward regulation, albeit with limited capacity due to their relatively small scale in AF23. Demand-side resources exhibit varying availability depending on electricity prices and therefore alternate between providing upward and downward flexibility.

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Figure 6 – Ramping needs for bidding zone DK1

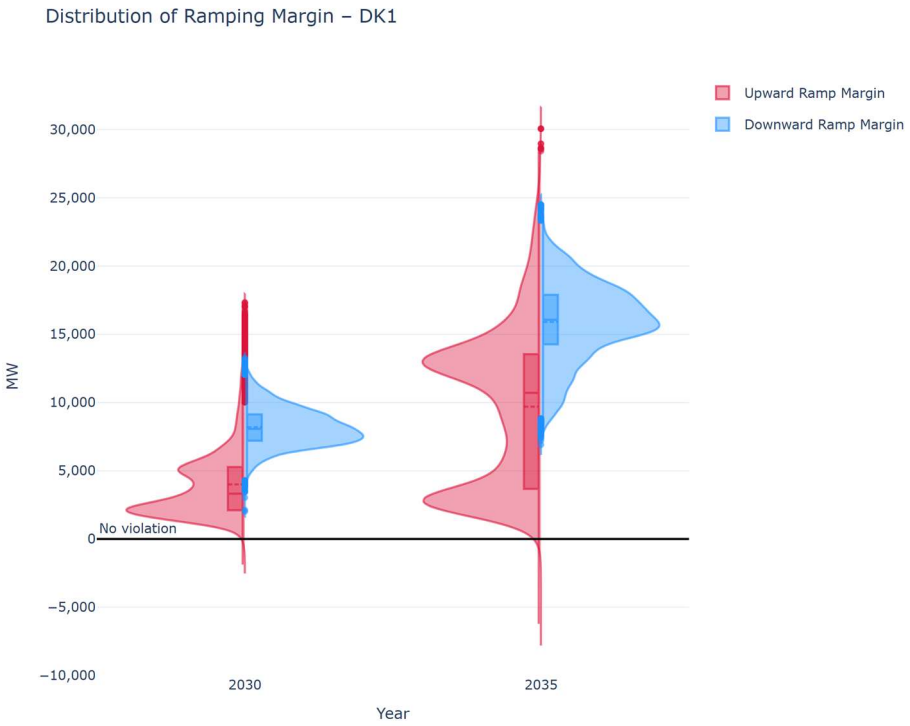
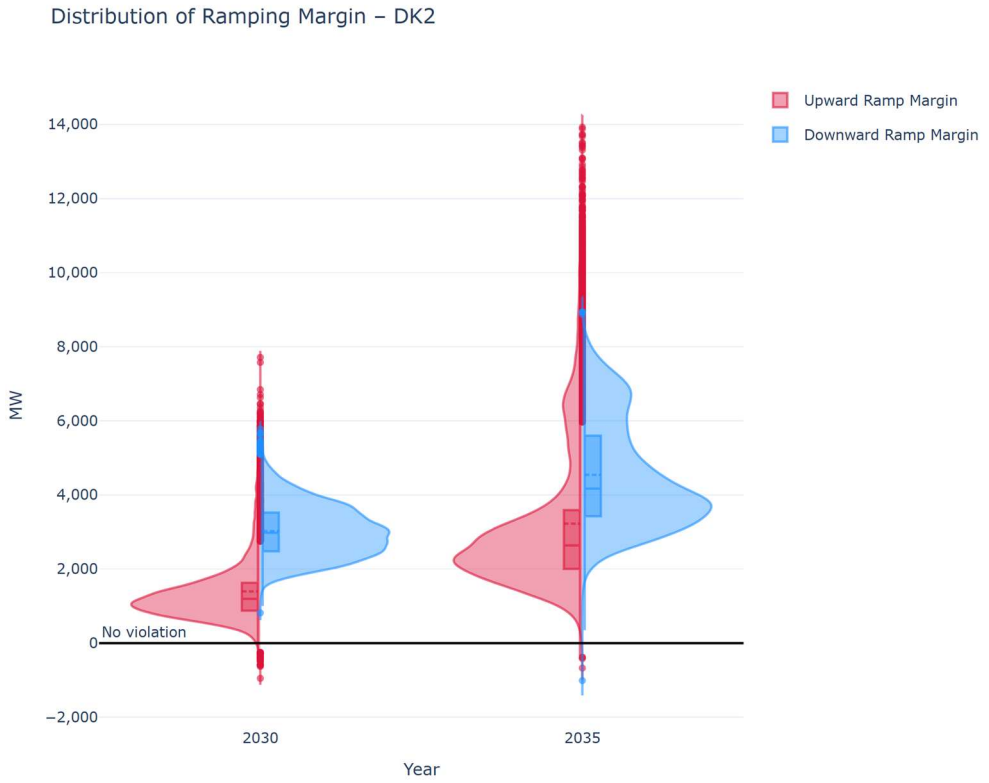


Figure 7 – Ramping needs for bidding zone DK2



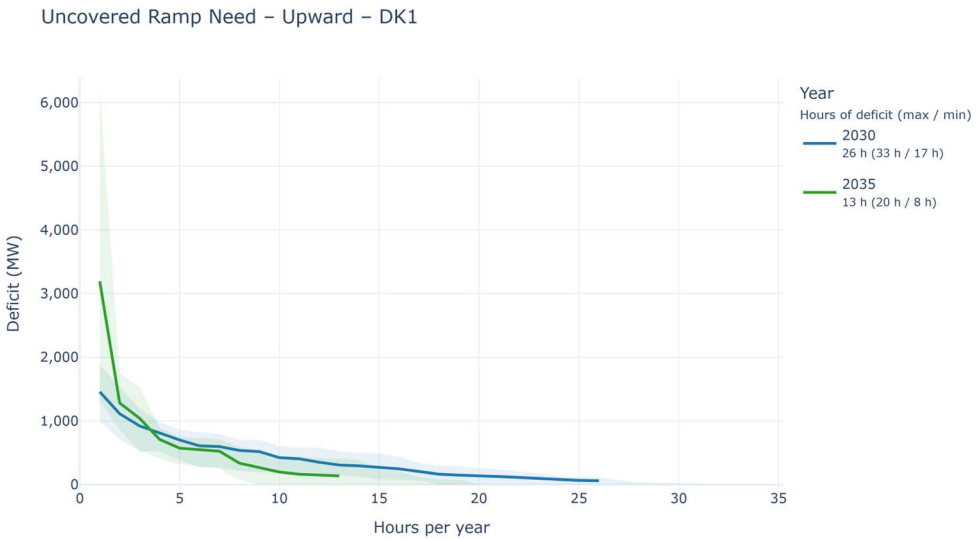
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3.1.2.1 Uncovered ramping needs

In DK1, the resulting uncovered ramping needs in 2030 are quite limited in frequency across the climate years with events of 1-2 GW (see figure 8).

2035 does show a decrease in the frequency of hours with uncovered ramping need, but with more extreme events of 2-6 GW. The decrease in occurrences in 2035 seems to be a combination of increased resources from RES and flexible demand – especially the expected roll-out of PtX that is expected in Denmark towards 2035.

Figure 8 – Uncovered ramping needs in DK1

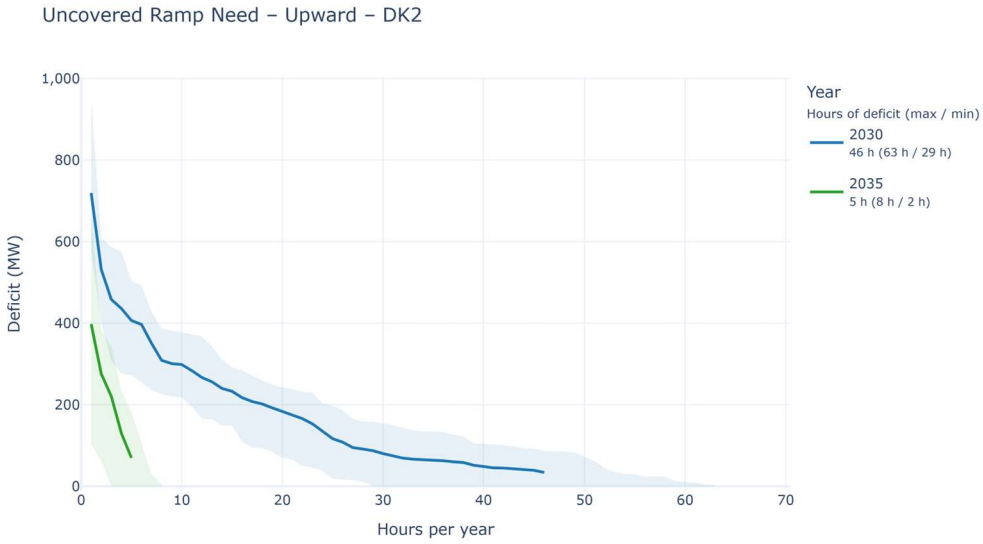


In DK2, the resulting uncovered ramping needs in 2030 are quite limited in frequency across the climate years, however a bit more frequent than in DK1. The magnitude of the larger uncovered ramping needs is about 0.5-1 GW which is relatively lower compared to DK1 (see figure 8 and 9).

In 2035, the ramping needs decrease substantially in frequency and less extreme events of 0.1-0.6 GW are identified. The decrease seems to be a combination of increased resources from RES, flexible demand (especially PtX), but also additional thermal generation.

Energinet regards 1-2 GW of uncovered ramping need as substantial, but controllable with existing reserves.

Figure 9 – Uncovered ramping needs in DK2



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3.1.3 Short-term flexibility needs

Short-term flexibility needs are defined as the 99.9 and 0.1 percentile of residual load forecast errors. They represent the amount of flexibility needed to cover unexpected variations in demand, RES generation (forecast errors) or unexpected outage of generation, consumption or transmission assets.

Table 3 shows the spread of short-term flexibility needs across bidding zones DK1 and DK2 in 2030 and 2035. The positive values indicate a surplus of RES generation and negative values indicate a surplus of demand. The short-term flexibility needs are larger in DK1 compared to DK2. This is due to the larger share of wind power in DK1. The flexibility needs are lower for the hourly time frame, mainly due to improved certainty in weather prognoses. Existing reserves can be utilized to help cover short-term flexibility needs.

Table 3 - Short-term flexibility needs measured in GW in day-ahead and balancing time frame (1 hour)

	DK1		DK2	
	2030	2035	2030	2035
Day-ahead	+1.9/-2.5	+2.2/-3.7	+0.7/-1.1	+0.9/-1.6
1 hour	+1.4/-2.0	+2.2/-2.5	+0.6/-0.9	+0.8/-1.2

While Table 3 presents the magnitude of the flexibility need, it does not show whether the system can meet it. To assess this, the available ramping capacity is compared against the flexibility need on an hourly basis, defining a margin as the available ramp minus the flexibility need. Figures 10 and 11 show the distribution of this margin for DK1 and DK2, respectively, split by year (2030 and 2035), forecast horizon (Day-Ahead and 1 Hour) and flexibility speed (slow and fast). The Day-Ahead horizon reflects the forecast error at the day-ahead planning stage, whereas the 1-hour horizon reflects the smaller forecast error closer to the operating hour; the shorter the horizon, the smaller the forecast error and hence the flexibility need. Flexibility speed distinguishes between slow flexibility, which can be activated within one hour (1-hour ramp), and fast flexibility, which can be activated within 15 minutes (15-minute ramp). The black line marks the "no violation" threshold at a margin of zero: values above the line indicate that the available capacity exceeds the need, leaving a surplus, whereas values below the line indicate hours in which the need cannot be covered by the available ramping capacity.

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Figure 10 – Short-term flexibility needs margins for DK1 for Day-ahead and 1-hour timeframes

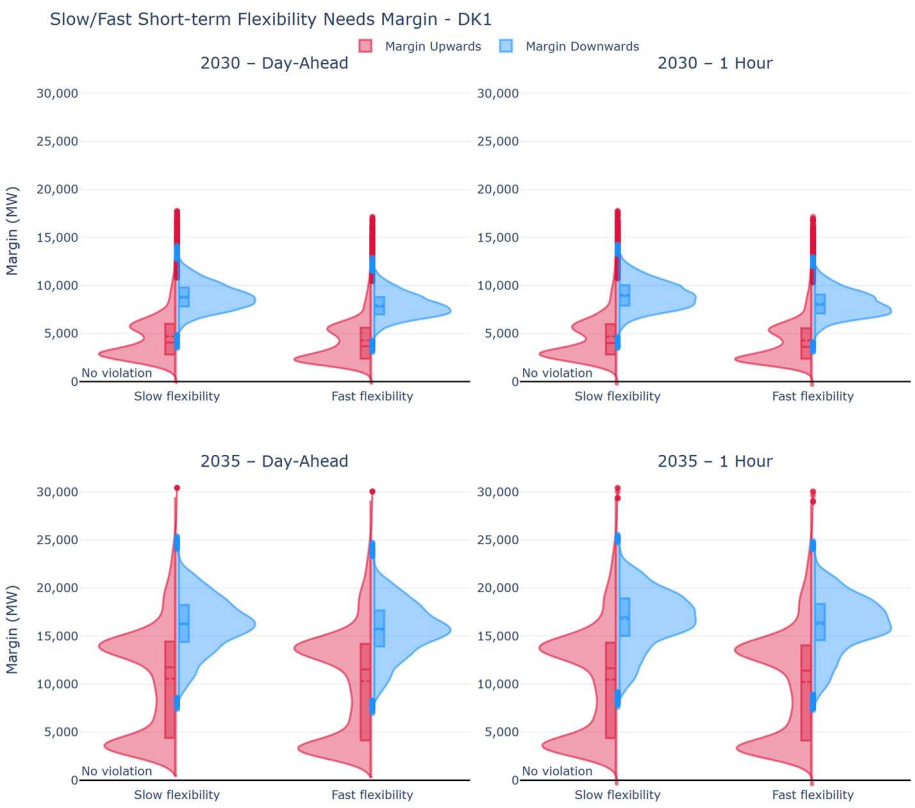


Figure 11 – Short-term flexibility needs margins for DK2 for Day-ahead and 1-hour timeframes



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3.1.3.1 Uncovered short-term needs

No downward uncovered short-term flexibility needs were identified in the analysis for either bidding zone across both target years. Tables 4 and 5 quantify the extent to which the available upward regulation capacity is unable to cover the short-term flexibility need arising from forecast errors, shown separately for DK1 and DK2, respectively. Each occurrence is counted for every hour in which the need exceeds the available capacity, i.e. where the margin becomes negative. The results are broken down by forecast horizon and flexibility speed. The tables present the maximum values across the simulated weather scenarios.

Table 4 – Uncovered short-term upwards flexibility needs DK1

Summary – Upward max across weather scenarios	2030			2035		
	Occurrences [h]	Max cap. [GW]	Max dur. [h]	Occurrences [h]	Max cap. [GW]	Max dur. [h]
Day-Ahead – Slow	2	0.2	2	–	–	–
Day-Ahead – Fast	4	0.2	2	–	–	–
1 Hour – Slow	1	0.4	1	1	0.5	1
1 Hour – Fast	1	0.5	1	1	0.6	1

Table 5 – Uncovered short-term upwards flexibility needs DK2

Summary – Upward max across weather scenarios	2030			2035		
	Occurrences [h]	Max cap. [GW]	Max dur. [h]	Occurrences [h]	Max cap. [GW]	Max dur. [h]
Day-Ahead – Slow	2	0.1	1	–	–	–
Day-Ahead – Fast	7	0.3	2	1	0.5	1
1 Hour – Slow	2	0.1	1	–	–	–
1 Hour – Fast	7	0.2	1	2	0.2	1

Across both zones and target years, uncovered upward needs are limited in frequency, short-lived and small in magnitude. Incidents occur between 1-7 hours per scenario, never last longer than two consecutive hours, and are sized between 0.1-0.6 GW. Two consistent tendencies emerge. First, fast flexibility (15-minute ramp) is consistently more exposed than slow flexibility (1-hour ramp), reflecting that fewer resources can respond within 15 minutes. Second, violations generally decline towards 2035: in DK1 the day-ahead violations disappear entirely while a few low-level violations remain in the 1-hour balancing time frame, whereas in DK2 violations diminish across both horizons.

The few identified incidents of uncovered short-term needs are limited to a few hours with relatively small uncovered needs, which indicates that the short-term flexibility needed can more or less be covered by existing flexible resources and reserves.

3.2 Network flexibility needs

The following describes the flexibility needed to adjust for grid availability, by means of preventing or solving congestion or voltage issues, at both distribution and transmission level.

3.2.1 DSO network needs

Network needs are the flexibility needed to adjust for grid availability, by means of preventing or solving congestion or voltage issues, at both distribution and transmission level. The Danish DSO network flexibility needs are calculated for all transformer substations (e.g. 50/10 kV and 60/10 kV) connected to the 50 kV and 60 kV grids which is highest distribution grid level in Denmark for DSOs. This applies to 17 out of 32 DSOs in Denmark. There are no DSOs licensed to operate electricity networks across the DK1 and DK2 bidding zones. The remaining 15 DSOs which only operates grids below 50 kV and 60 kV have reported their results to the local higher-level DSO.

Aggregation of the flexibility needs (MW and MWh) for the 17 DSOs is carried out without considering simultaneity and without taking the grid structure into account.

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In general, the total flexibility need (MW and MWh) for all of Denmark cannot be used to assess the importance of flexibility in relation to reducing peak electricity consumption in 2030 and 2035; nor to assess how the flexibility need in the individual grid areas translates into a flexibility need at high voltage levels, including the transmission grid. Thus, the calculation cannot show to what extent any flexibility initiatives at lower voltage levels can be used to reduce the flexibility need for the transmission grid. This will require an aggregation where Energinet models the simultaneity of the transmission grid.

The total DSO network flexibility needs for DK1 and DK2 bidding zones combined is listed in figure 10. In the upward direction, the network needs increase from 114 MW in 2030 to 159 MW in 2035. The opposite trend can be seen in the downward direction, where the network needs decreases from 176 MW in 2030 to 117 MW in 2035.

This is primarily due to the commissioning of a number of grid expansion projects to accommodate increasing production capacity between 2030 and 2035, which reduces the loading on the connections.

It is assumed that the primary contractual means to access the necessary flexibility will be to arrange flexible connection agreements (FCA) with future customers that are in proximity to the transformer substation. No local flexibility market has been implemented in Denmark as of 2026. The requirement of having customers with FCAs in close proximity to the identified flexibility need means that some uncertainty will arise to whether each estimated flexibility need can be mitigated.

It will not be possible to establish the effect of the calculated and aggregated flexibility need in connection with assessments of grid adequacy in the transmission grid. Thus, the assessment cannot demonstrate to what extent potential flexibility initiatives at lower voltage levels can be used to reduce the flexibility need in the transmission grid. In order to accomplish this, Energinet should have more time to accommodate model simultaneity for the transmission grid with respect to the reported DSO network needs.

Table 6 – DSO network needs

Upward network needs				
Voltage level	Target year	Network needs (MWh)	Network needs (MW)	Time periods
50-60 kV	2030	6,690 (DK1: 1,168 DK2: 5,522)	114 (DK1: 29 DK2: 84)	January-March and October-December for each bidding zone
50-60 kV	2035	19,602 (DK1: 2,038 DK2: 17,564)	159 (DK1: 65 DK2: 94)	January-March and October-December for each bidding zone
Downward network needs				
50-60 kV	2030	81,910 (DK1: 81,686 DK2: 224)	176 (DK1: 169 DK2: 7)	DK1: April-September DK2: January-December
50-60 kV	2035	29,548 (DK1: 28,876 DK2: 672)	117 (DK1: 97 DK2: 20)	DK1: April-September DK2: January-December

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3.2.2 TSO network needs

The dedicated model used by Energinet to conduct the system needs analyses is not developed to simulate national transmission network constraints according to Article 7 of the FNA methodology. Therefore, in an agreement between the Danish Energy Agency and Energinet, the TSO network needs are estimated in another model with an approach similar to the DSO network needs.

However, the approach from Energinet does not produce results that can be accumulated, and it is not possible to calculate a total aggregated flexibility need across the grid. Based on the results, it cannot be deduced whether there is simultaneity between overloads on the connections or to what extent the overloads are caused by the meshed structure of the grid.

Therefore, the overload energy on individual connections cannot be converted into a total flexibility need, since the contribution of a flexibility service depends on its location within the grid.

For the TSO network needs, 30 transmission lines in the TSO grid across the two Danish bidding zones will reach congestion levels of up to 120% of the maximum tolerated capacity in 2030 and 21 transmission lines in 2035. This results in a theoretical minimum network flexibility need of 1,674 MWh across 2030 in the DK1 bidding zone and 1,432 MWh in the DK2 bidding zone. For 2035 the theoretical minimum network flexibility need is estimated to be 7,071 MWh in DK1 and 1,112 MWh in DK2. The estimated network flexibility needs are expected to be significantly higher, since the flexibility services cannot be assumed to be optimally located relative to the grid constraints. In addition, the meshed structure of the grid and the fact that a single service cannot relieve all connections simultaneously further increase the need.

In 2035, the number of connections with congestions levels of up to 120% of the maximum tolerated capacity is reduced to 21 connections. This is primarily due to the commissioning of a number of grid expansion projects between 2030 and 2035, which reduces the loading on the connections.

In 2035, there is a minimum need for 7,071 MWh in DK1 and 1,112 MWh in DK2. Again, the actual need is expected to be significantly higher.

Til arbejdsbrug/Restricted

Chapter 4: Barriers and mitigating measures

The following chapter assesses selected barriers for flexibility, present mitigating measures and evaluates the contributions from digitalization as required in article 19e(2) in the Electricity Market Regulation. Barriers are structured around the following categories inspired by ACER's *recommendations of barriers to consider*.

- Lack of enablers
- Lack of incentives to provide congestion management
- Potential bias in regulatory incentives to system operators to consider non-wire alternatives
- Lengthy process and complex administration

Throughout the latter half of 2025, the Danish Energy Agency conducted a wide national stakeholder involvement to identify the main barriers for achieving a higher usage of flexibility resources.

In general, there are no significant legal barriers for market access to the Danish grid or to markets for energy, balancing and ancillary services in DK1 and DK2. In the last couple of years, there has been a dramatic shift in the composition of market participants for especially ancillary services. In 2023 approximately 30 assets were prequalified to deliver ancillary services. In 2024 and 2025 the number of prequalified assets was increased to over 700. The increase reflects a broader shift in the composition of prequalified assets, including an increased participation from battery energy storage systems and flexible consumption resources through aggregators.

4.1 Barriers to promote flexibility

Lack of enablers

Infrastructure and data transparency are key enablers for utilization of flexibility from various resources. Therefore, the lack of both physical and digital infrastructure and access to data that help for example identify potentials are barriers.

Infrastructure

On the physical side, the national grid is fairly able to utilize flexibility due to a successful rollout of smart meters – for more information see chapter 4.2. That being said, there is still a need for new hardware such as enhanced deployment of phasor measurement units that support real-time grid monitoring and more intelligent flexible units such as EV-chargers that support vehicle to grid functions, which enable a significant flexibility potential that can handle a variety of flexibility needs.

On top of the physical infrastructure there is a lack of digital infrastructure that enables automatic efficient activation and interoperability between market platforms and system operators' control systems. Although Denmark already has implemented regulation introducing the role of independent aggregators, the digital infrastructure (i.e. the *technical* regulations) to support the role in the electricity system is still under development by Energinet. Until the technical regulations are in place, aggregators can make use of a solution called "multipart BSP", whereby aggregators (as Balancing Service Providers, BSPs) enter into agreements with Balancing Responsible Parties (BRPs) to deliver balancing services to Energinet. However, they cannot as of yet deliver services without agreements with BRPs.

The lack of flexibility markets facilitating market-based congestion management could also be seen as a barrier in regards to missing infrastructure. For the time being Danish DSOs are conducting pilot projects to make initial assessments of feasibility and cost-efficiency in comparison with grid expansion.

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Data transparency

There is a lack of access to reliable and updated data such as data on flexible units' location (heat pumps, EV chargers, household batteries), real-time electricity consumption and tariffs.

One example is if e.g. aggregators (multipart BSPs), to the benefit of the consumers, want to optimize their activations based not only on the electricity price, but also on the applicable grid charges. Currently, they are hindered in doing so efficiently is due to the multiplicity of formats in which DSOs provide network charge information publicly on Energinet's Energi Data Service and the lack of access to the applicable grid charges at the address level (currently only accessible for electricity suppliers).

Another example is if aggregators would like to offer consumers an option to manage flexible units while taking the real-time consumption and production into account, e.g. to stay within limitations on the assigned electricity supply capacity (main fuse capacity). While this in principle is doable, a cumbersome process for identifying and activating the relevant option (port) for connecting an external device to the consumers remotely readable smart meter, means that these solutions (products) are difficult to develop and market to the consumer. Hence, an estimated less than 0.5 pct. of the ports connecting an external device for consumption-related real-time data directly from the meter are activated.

Issues such as these are currently being assessed as part of the Utility Digitalisation Program (see section 4.2).

Lack of incentives to provide congestion management

Current regulatory framework incentivizes flexible resources to provide congestion management through non-firm grid connection products, dynamic tariffs (time of use tariffs) and geotagging of flexible resources used for providing ancillary services. The idea is to utilize specific flexible resources' location to help with local congestion management while also ensuring that activation does not exacerbate existing bottlenecks. With increasing need for congestion management, Energinet is working to further utilize geotagging to support more efficient use of flexible resources.

A variety of flexible connection agreements are available - especially at the DSO-level - but the lack of products aimed at congestion management in the transmission system pose a barrier for providing congestion management. DSOs and Energinet are separately and in cooperation working on developing new attractive products but ensuring that system operators are able to activate grid users' flexible connection agreements efficiently is a complicated task especially in regards to developing adequate IT-infrastructure.

Dynamic tariffs on consumption have been implemented by all DSOs and over the past years it has helped push for more flexible consumption. Nevertheless, the lack of more sophisticated tariff structures that provide more granular price signals that promote flexible behavior from different grid users is a barrier. On this matter DSOs and Energinet are developing a so-called TSO-DSO-tariff model that will increase coordination between Energinet and DSOs. The TSO-DSO model will shift Energinet's settlement point from individual grid users in the DSO-grid to the interface between Energinet and the DSOs. Under the current framework, Energinet levies tariffs on all grid users (both consumers and generators). Under the proposed model, Energinet will only levy tariffs on grid users directly connected to the transmission system and on the distribution system operators that have an interface with Energinet.

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As of June 2026, Denmark has not established any local flexibility markets as an alternative tool to improve congestion management in the electricity grid. In Q1 2025, two pilot projects for testing local flexibility markets were submitted to the Danish Utility Regulator (DUR) by the DSOs Cerius-Radius and Trefor Elnet. As of June 2026, the submissions are still under review for approval by DUR.

Potential bias in regulatory incentives to system operators to consider non-wire alternatives

Danish distribution system operators are subject to a revenue cap regulation, which determines how much money they can collect from tariff payers each year. The revenue caps are based on the operators' historical costs, as well as ongoing adjustments for new tasks and changes in activity levels, and the cap is recalibrated between each five-year regulatory period. The revenue cap is designed to be OPEX-CAPEX neutral.

Costs related to flexibility services are therefore treated on equal footing with other costs included in the basis of the revenue cap, and the application-based electrification supplement (from January 2025 and further specified in January 2026) makes it possible to apply for coverage of additional costs for procuring flexibility services on equal terms with investments, when increased load in the high-voltage DSO-grid needs to be managed.

There are still some aspects of the revenue cap regulation where it can be discussed whether they create barriers to the use of flexibility services. As an example the automatic indicators for adjusting the revenue cap in response to changes in activity levels, especially the number of substations, provide an explicit economic incentive for grid expansion rather than the use of non-wire alternatives The Danish Energy Agency will continuously monitor if the regulation for DSOs are sufficiently technology neutral between the choice of grid expansion and the use of non-wire alternatives.

The transmission system operator, Energinet, is similarly subject to a revenue cap regulation. Energinet can apply to the regulatory authority for coverage of CAPEX and OPEX in their revenue cap. There could be some aspects of the revenue cap regulation where it can be discussed whether they create barriers to the use of flexibility services, specifically the difference in remuneration between investments and operating costs. However, flexibility and an efficient use of the current grid is part of the focus of the Danish Energy Agency's ongoing work related to Energinet's energy system planning. Furthermore, as a state-owned TSO, Energinet is legally required to ensure that the grid capacity needs are met through the socio-economic appropriate solutions.

Lengthy processes and complex administration

Processes regarding grid connection is a central barrier for introducing more flexibility resources such as storage and flexible heating technologies. Grid capacity is in shortage because grid development is not able to meet fast rising demand for capacity driven by electrification, deployment of renewable energy, datacenters and BESS. As a consequence, grid users in general face long grid connection lead times - depending on location, behavior and grid needs. In dealing with this challenge, Danish authorities, system operators and private stakeholders are in the midst of implementing different measures that can bring down lead times, ensure more efficient use of grid capacity and speed up grid development. This includes stronger incentives for co-location, prioritization among applications for grid connection, less environmental approvals and stronger focus on anticipatory investments among other topics.

The DUR approval processes regarding system operators' methods for grid access and tariffs are sometimes lengthy and therefore also pose a a barrier. While acknowledging the complexity of these approval processes, more speedy and agile processes could ensure that new methods that enable and incentivize more flexibility are brought into effect faster, e.g. methods for flexible connection agreements. On this basis, Denmark is currently conducting an analysis aimed at identifying measures for faster approval processes.

Til arbejdsbrug/Restricted

4.2 Digitalisation

The Danish grid has the infrastructure to utilize flexibility. Since 2020, Denmark has achieved a nationwide rollout of smart electricity meters through a combination of clear regulation, coordinated infrastructure, and decentralized implementation.

Smart meters

In 2013, the Danish government mandated that all electricity consumers must have remote readable smart meters installed by 2020. The rollout was implemented by DSOs and primarily financed by grid companies, with costs recovered through regulated network tariffs rather than upfront customer payments. The DSOs replaced old legacy meters with devices capable of recording electricity consumption at 15-minute intervals, which is sent to the national electricity data platform DataHub administered by Energinet. This centralized platform also enables faster switching between electricity suppliers and improves market transparency. The remote readable smart meter must also include an option for the consumer to connect an external device in accordance with open standards and continuously extract consumption-relevant data directly from the meter.

Additionally, with the implementation of the updated article 4 in the Electricity Market Directive, Denmark is introducing serial metering. This will allow consumers to have separate electricity supply agreements for flexible units, e.g. their EV or their heat pump, using smart meters directly on the (or connected to) the flexible unit. This will provide greater data transparency on the consumption/behaviour of flexible units. The ministerial order for serial metering will enter into force in July 2026, and the technical setup in DataHub is expected to follow in 2027/28.

Independent aggregator

The Danish electricity system is currently experiencing a large-scale rollout of EVs and individual heat pumps which potentially can provide significant demand-side flexibility. To ensure coordination in using these many small storage units, aggregators are needed to accumulate capacity that can be submitted in the markets.

With the implementation of the clean energy package in 2019 and the Danish ministerial order in 2023, Energinet became responsible for implementing the independent aggregator role in Denmark. It allows flexible electricity demand from consumers to participate in energy markets without being tied to an electricity supplier (balance responsible party). The independent aggregator collects and manages small amounts of flexible consumption or production from many users, such as households, electric vehicles, heat pumps, or industries. By combining these small resources, the aggregator can create sufficient capacity to participate in wholesale markets and or balancing markets operated by Energinet.

Energinet is currently working on a new, simplified set of technical regulations for independent aggregators. These technical regulations must be approved by DUR) before they enter into force. However, aggregators can already operate in Denmark as long as they have an agreement with a BRP, in what is called "multipart BSP". With "multipart BSP", aggregators (as Balancing Service Providers, BSPs) enter into agreements with Balancing Responsible Parties (BRPs) to deliver balancing services to Energinet, and get compensated for it. This means that aggregators can operate, but not *independently* (yet). The possibility to operate independently will come once Energinet's technical regulations for independent aggregators are finalized and approved by the regulator.

Utility Digitalisation Program

In 2024, a broad agreement across Danish political parties launched the Utility Digitalisation Programme, which shall establish frameworks and regulation for collection, structuring and publishing of data from the utilities sectors, including electricity. A working group regarding electricity (el-DUG) has been formed to bring together stakeholders from across the electricity sector, including DSOs, Energinet, technology companies, academia, and other users of electricity data, to identify data needs, develop recommendations, and promote better access to and use of electricity data in support of the green transition and a more flexible energy system.

In practice, el-DUG has developed a work programme and expects to produce concrete recommendations including related to:

Til arbejdsbrug/Restricted

- Harmonised release of electricity grid charges at the address level, to the benefit of consumers with an interest in products and services drawing on a more complete electricity price signal.
- Appropriate, automated and direct access to electricity data from the smart meter, to the benefit of consumers with an interest in product and services taking the real-time electricity consumption of the house into account.
- Release of relevant electricity datasets on consumption, generation, and other relevant DSO data. E.g. giving consumers easy access to their assigned electricity supply capacity (main fuse capacity), as a basic right and to facilitate planning.
- Management and quality assurance of master data registries (base registries with information regarding electricity-producing and electricity-consuming installations like solar PV, battery storage systems, EV charging stations, etc.) at the Danish Energy Agency and Energinet, to improve the registries, make them more resource efficient to manage, and increase their usefulness in relation to the Danish energy system.
- Support for the work on standards for bidirectional charging (vehicle-to-grid/V2G), to facility the adoption of V2G to the benefit of the consumers and to leverage the flexibility of electric vehicles functioning as batteries capable of supplying power to the home or the grid when demand is highest.

The Utility Digitalisation Programme runs through 2027 and is expected to deliver a number of recommendations for consideration by the Minister for Climate, Energy and Utilities.

Til arbejdsbrug/Restricted