

Long-term power consumption development for data centers in Norway

Report for Norwegian Data Center Industry

Expected trajectory, July 2026

By THEMA Consulting Group

Long-term power consumption development for data centers in Norway

Norwegian data center power demand is projected to reach around 25 TWh by 2050, nearly eight times today's level

Global data center power demand is rising sharply, driven by AI's scale and complexity and accelerating digitalization. Data center infrastructure is also increasingly viewed as critical to economic competitiveness, security, and digital sovereignty, fueling a policy-driven race for capacity. The EU now targets tripling capacity within five to seven years, exceeding demand projections from industry reports.

Norway is following the same trajectory, with both our and other outlooks revising expected consumption upward since previous reports. Data center power consumption is expected to grow from around 3 TWh today to around 25 TWh by 2050 – an eightfold increase, with roughly 80% already scheduled before 2040. Our outlook sits above consensus through the mid-2030s, reflecting confidence that reserved capacity will materialize, before converging with other outlooks long term.

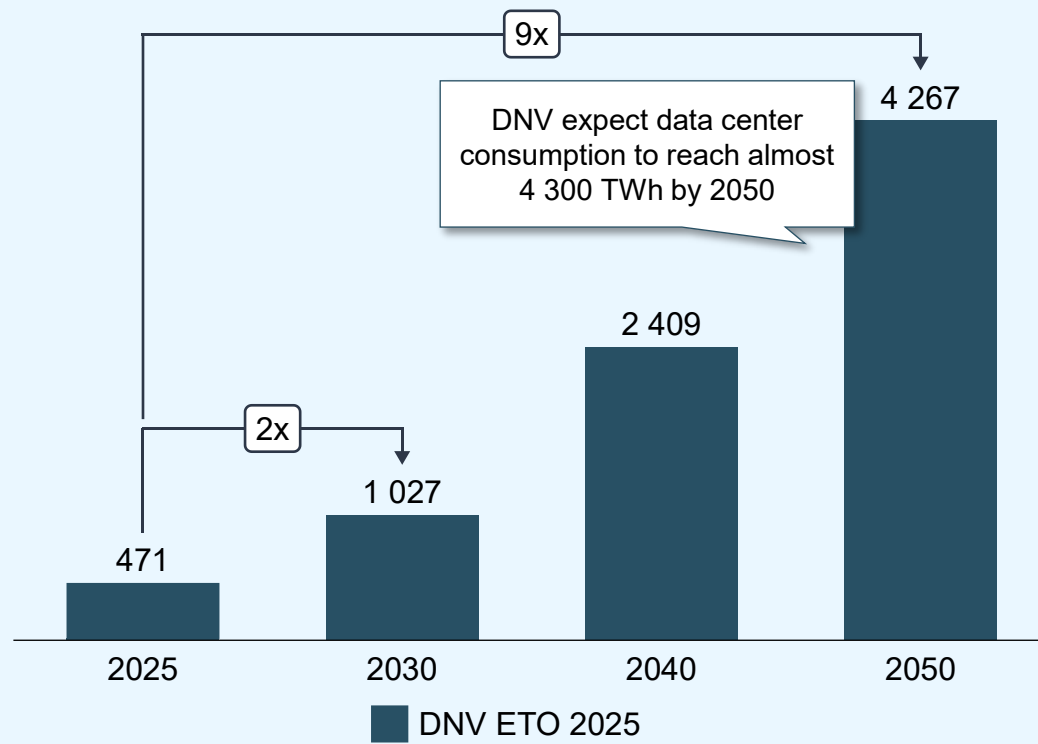
As a result, data centers are set to account for 13% of Norway's power demand by 2050, up from 2% today. Within Europe's build-out, Norway is also expected to capture a growing share of data center capacity through the 2030s, before stabilizing.

In the long term, the main constraint for growth will be build-out of new power supply to meet the demand. Through the early 2030s, growth rests on projects already in Statnett's connection queue and new grid capacity coming online; beyond 2035, hinges on how much power supply Norway can add – with political opposition to rising consumption a growing risk. This outlook draws on Statnett's connection data, insights from data center actors, cross-checked literature and official outlooks.



Data center power demand is rising sharply worldwide

Expected global power consumption from data center (TWh)



Sources: DNV ETO (2025); IEA (2026); techcrunch.com

... largely driven by the increasing complexity and use of AI



AI and digitalization are drivers for increased processing power

- AI models are growing larger and more compute-intensive, pushing operators everywhere to build more data center capacity to keep up.
- AI adoption is scaling fast. ChatGPT alone passed 1 billion monthly active users in 2026, driving global demand for AI infrastructure to new highs.
- Digitalization keeps shifting workloads to the cloud, so capacity needs are rising in every region, not just where AI is developed.

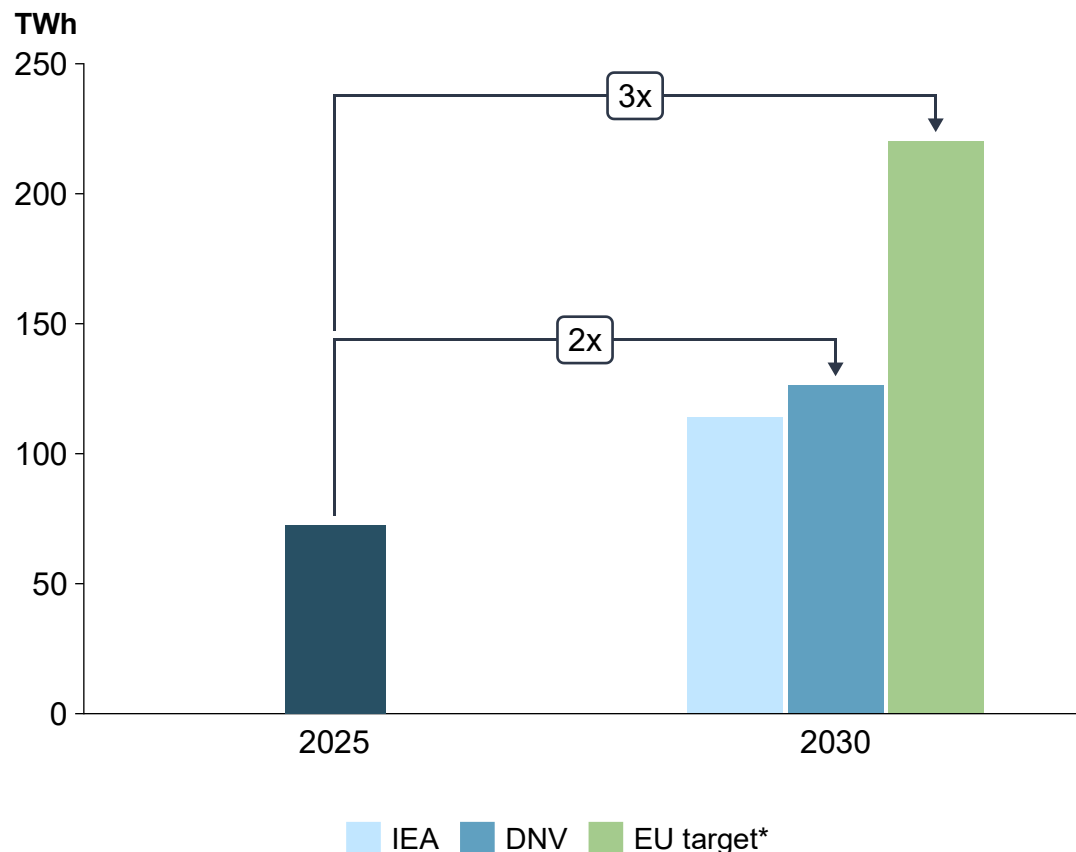


Shift in geopolitical competition towards AI and data centers

- Governments now treat data centers as critical infrastructure for economic competitiveness, security and digital sovereignty.
- The US, China, the EU, India and Southeast Asia are all offering incentives, so each region is racing to build its own capacity rather than depend on others.
- Build-out is regionalizing; investment and competition for power, land and chips are shifting into markets that had little data center presence before.

European data centers are set to consume a growing share of the region's power.

European data center power demand projections show rapid increase, still far from EU target of 3x data center capacity



Source: *DNV (2025), ETO 2025; IEA (2026), Key Questions on Energy and AI; EU (2026) Strategic Roadmap; EU (2025) Action Plan, EMBER (2025), Grids for data centers: ambitious grid planning can win Europe's AI race*

Data center infrastructure is now a matter of national and digital sovereignty

AI has increasingly economic and geopolitical importance, fueling a policy-driven build-out of data centers in Europe



EU policy is driving a major push to scale data center capacity

The EU's AI Continent Action Plan and Strategic Roadmap for AI in energy aim to triple data center capacity within 5-7 years and mobilize EUR 20 billion for five AI Gigafactories, making policy, not just market demand, a key driver of where and how fast new capacity gets built.



Grid access is now the key constraint on data center location

Traditional FLAP-D markets (Frankfurt, London, Amsterdam, Paris and Dublin) are strongly constrained by power grid bottlenecks, limited land and stricter regulations, pushing developers to look beyond these established hubs for new sites.



Data center investment is becoming more decentralized

Power grid bottlenecks are attracting developers to areas with shorter connection lead times and lower congestion, such as the Nordics and Italy, while sustainability demands are pushing them toward regions with renewable energy and stable regulatory environments – spreading growth beyond Europe's traditional hubs.

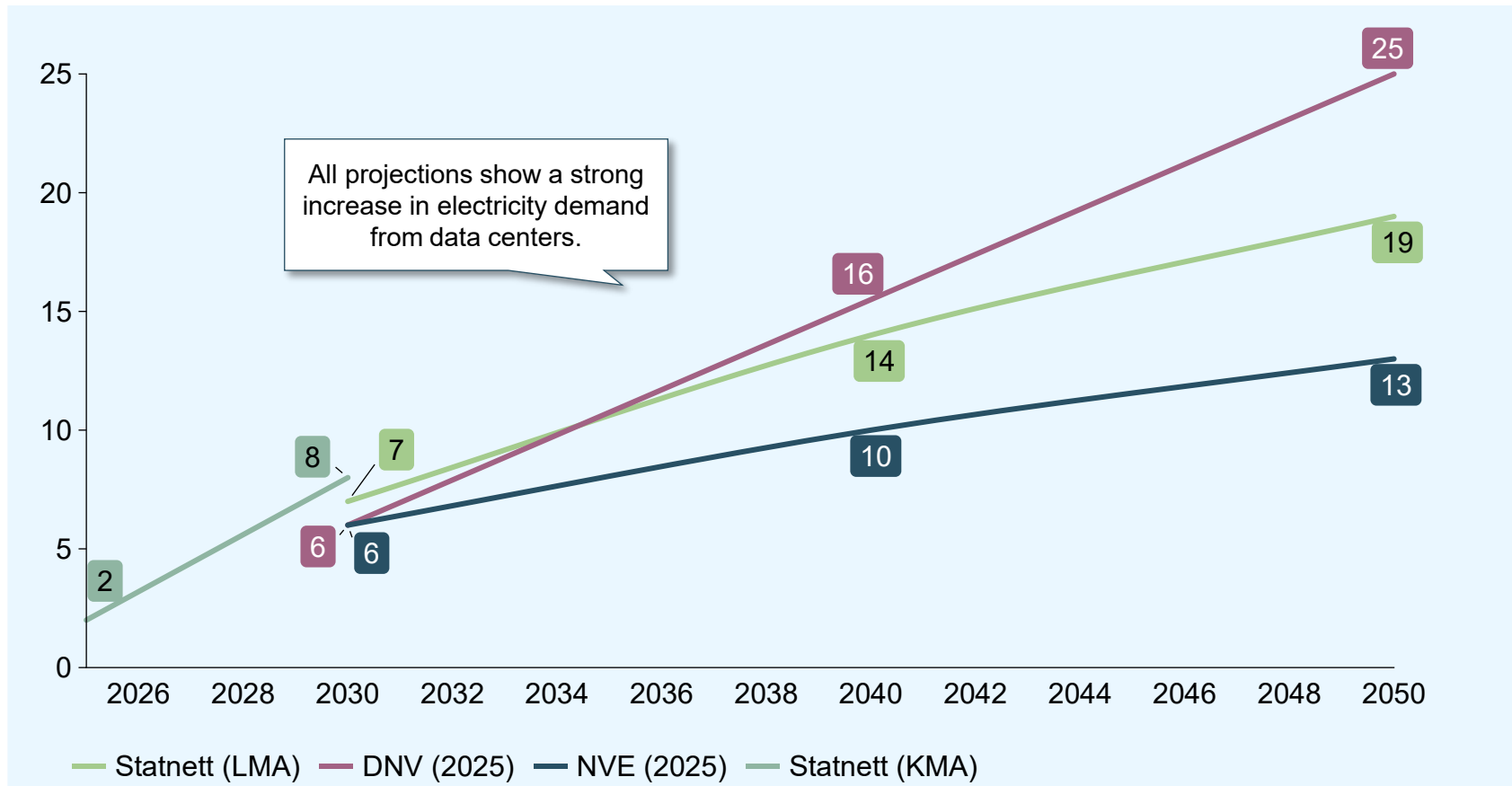
These shifts make energy-rich regions with grid access attractive for future data center investments.

*Consumption calculated using 8736 hours and a capacity factor of 70%, in 2025 capacity was 12 GW, tripling of this capacity gives 36 GW in 2030.

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There is a consensus of data center growth in Norway going forward, with power consumption expectations adjusted up from 2024

Expected development in power consumption from data centers in Norway (TWh), based on previously published reports

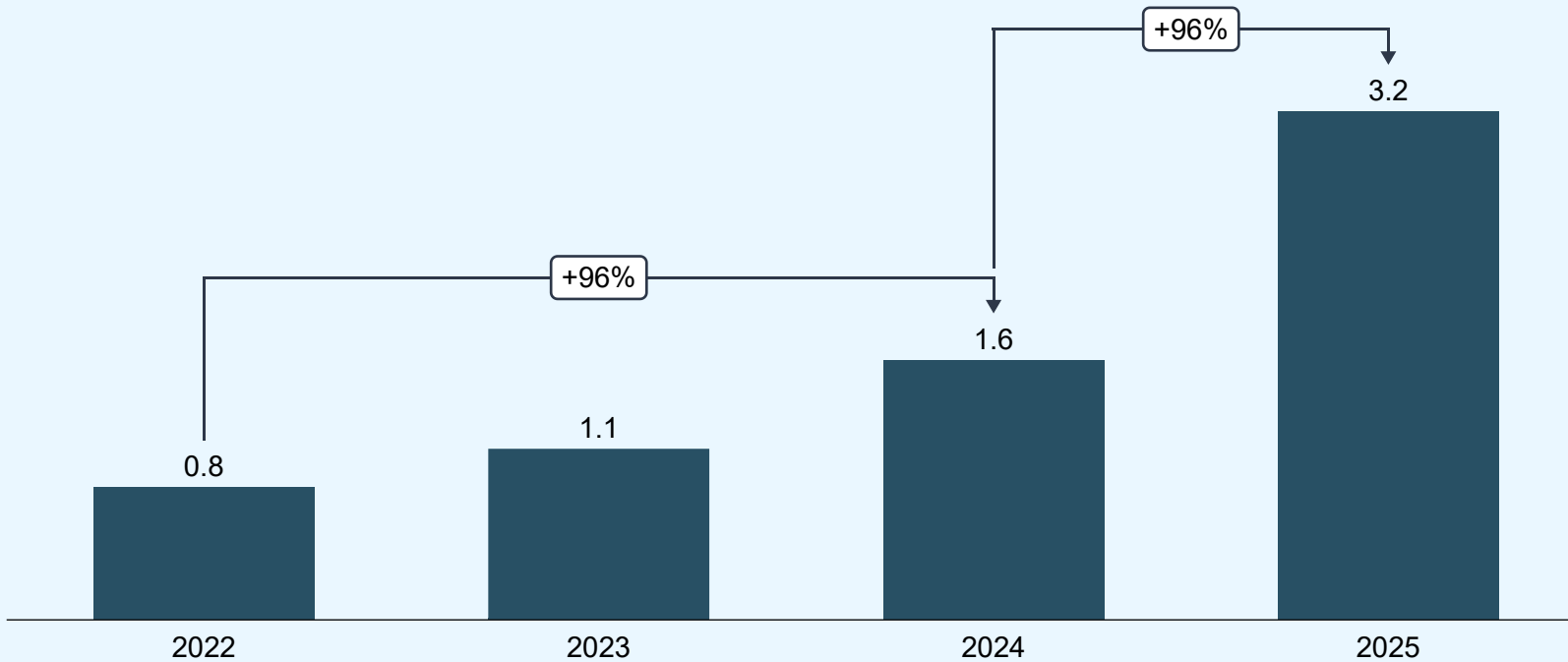


- In the latest reports, all actors have revised their consumption projections upward, driven by the expectation of continued growth of AI use and the power intensity of these services.
- Reduced expected consumption from battery factories and hydrogen production, combined with political ambitions of keeping data within Europe, also allowed for some increase of data center power consumption.
- However, the volume of reserved capacity, which may impact projected power consumption, has increased since the release of these reports.
- All projections are relatively aligned in the short term, variations in expectations from 2035 and onwards.
- The wide variation in expected demand reflects uncertainty about future development and differences in interpretation of key contributors such as technological innovation and AI uptake, attractiveness of Norway for international data center players, cost of electricity, grid capacity and assumptions for new production.

Sources: [DNV \(2024\)](#), [ETO Norway 2024](#); [Statnett \(2025\)](#), [Langsiktig markedsanalyse](#); [NVE \(2024\)](#), [Utviklingen i kraftmarkedet mot 2050](#); [NVE \(2025\)](#), [Langsiktig kraftmarkedsanalyse](#); [Statnett \(2025\)](#), [Kortsiktig markedsanalyse 2025-2030](#); [DNV \(2025\)](#), [ETO Norway 2025](#)

Data center consumption in Norway has already climbed sharply over the past years, showing an exponential growth pattern

Power consumption from data centers in Norway (TWh*)



Consumption from data centers had an almost 100% increase between 2024 and 2025.

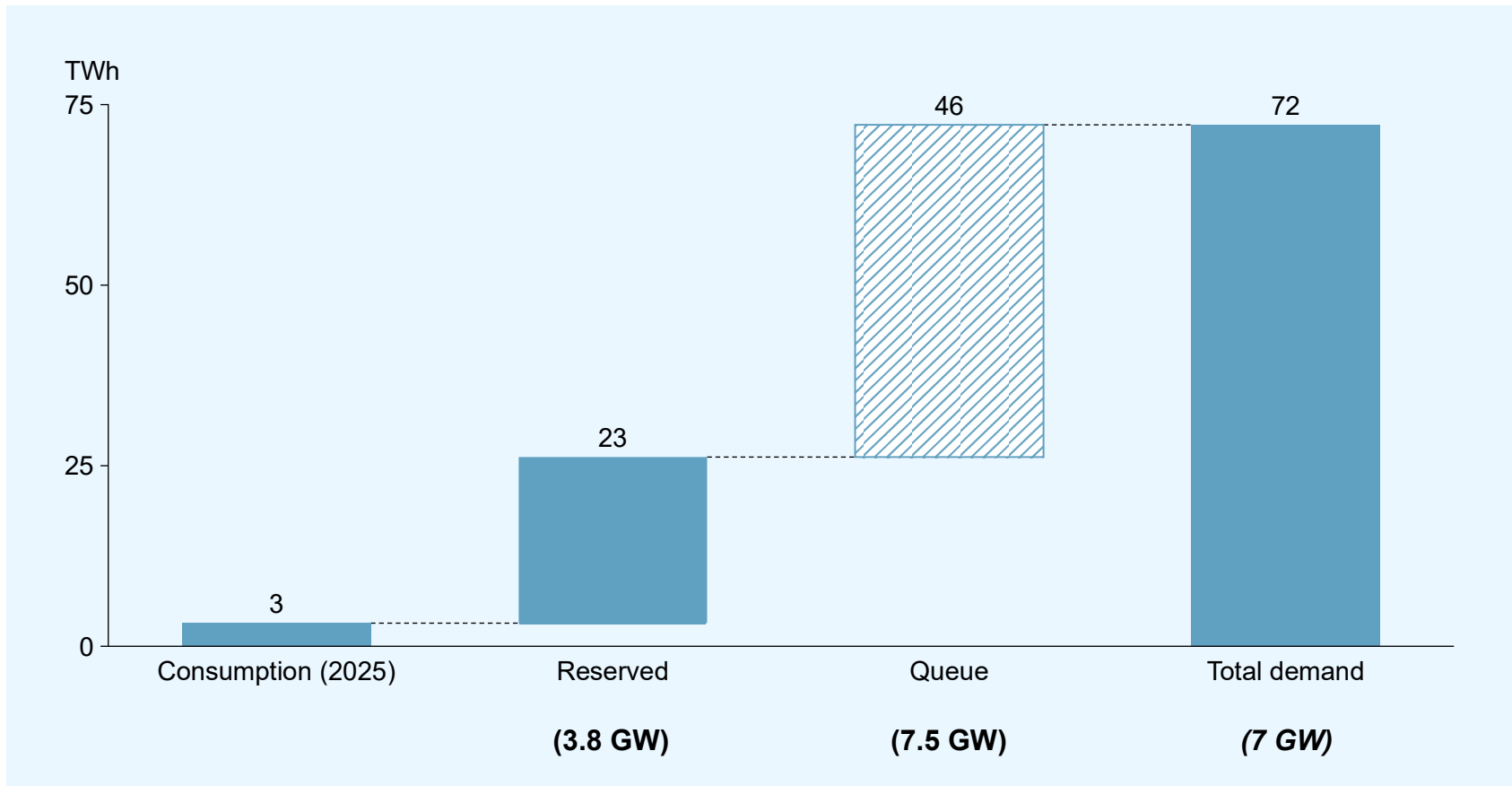
- This can be explained by the delay between when a data center is allocated grid access and when the facility starts consuming power (described by “the ketchup effect”).
- In 2025, several data centers that had previously obtained grid access became operational.
- This includes Google’s data center in NO2 with a capacity of 240 MW and Green Mountain’s data center in NO1 with a capacity of 90 MW, that are now coming online in the grid.

*Actual consumption with numbers from Elhub

** A capacity factor of 70% is used to convert capacity to consumption

Data centers now dominate Statnett's grid connection queue – a signal of appetite, not confirmed demand

Demand for grid connections from data centers at Statnett (TWh equivalents)



How to read this graph

- **Reserved:** Applicant has secured capacity in existing or planned grid.
- **In queue:** Applicant is mature but awaits available capacity.
- Data centers apply for grid capacity in megawatts (**MW**). This shows the maximum power they want to be able to draw at any given time.
- To show annual electricity use (TWh), we convert MW → **TWh** with a *capacity factor*.
- We assume **70% capacity factor**, meaning data centers use ~70% of their max capacity on average.
- With this assumption, we can compare today's actual consumption with the size of the grid connection applications waiting in line.

Power demand from Norwegian data centers is expected to grow eightfold before 2050, with significant demand scheduled before 2040

Expected development of data center demand in Norway (TWh)

Today – 2030

Strong growth as reserved and delayed capacity starts operation

Reserved capacity under construction is coming online before 2030. Demand is highest in northern Norway, but southern Norway overtakes in 2028 even after Stargate's start-up in NO4 (2027).

2030 – 2035

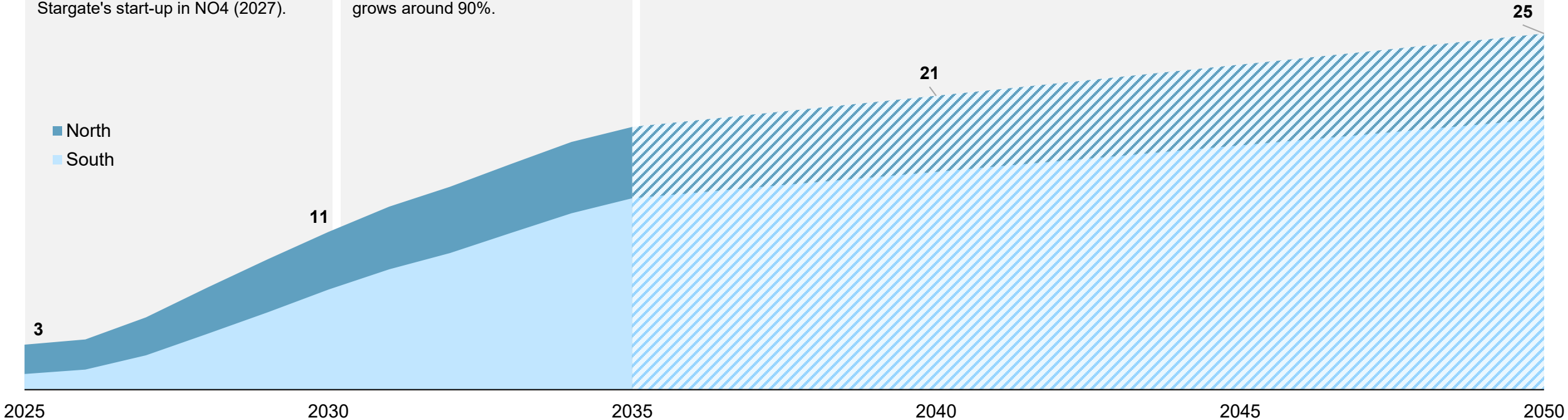
Continued growth as post 2030 reserved capacity comes online

Growth continues, driven by reserved capacity starting after 2030 and ramp-up of pre-2030 projects. Northern Norway's growth slows, while southern Norway grows around 90%.

2035 – 2050

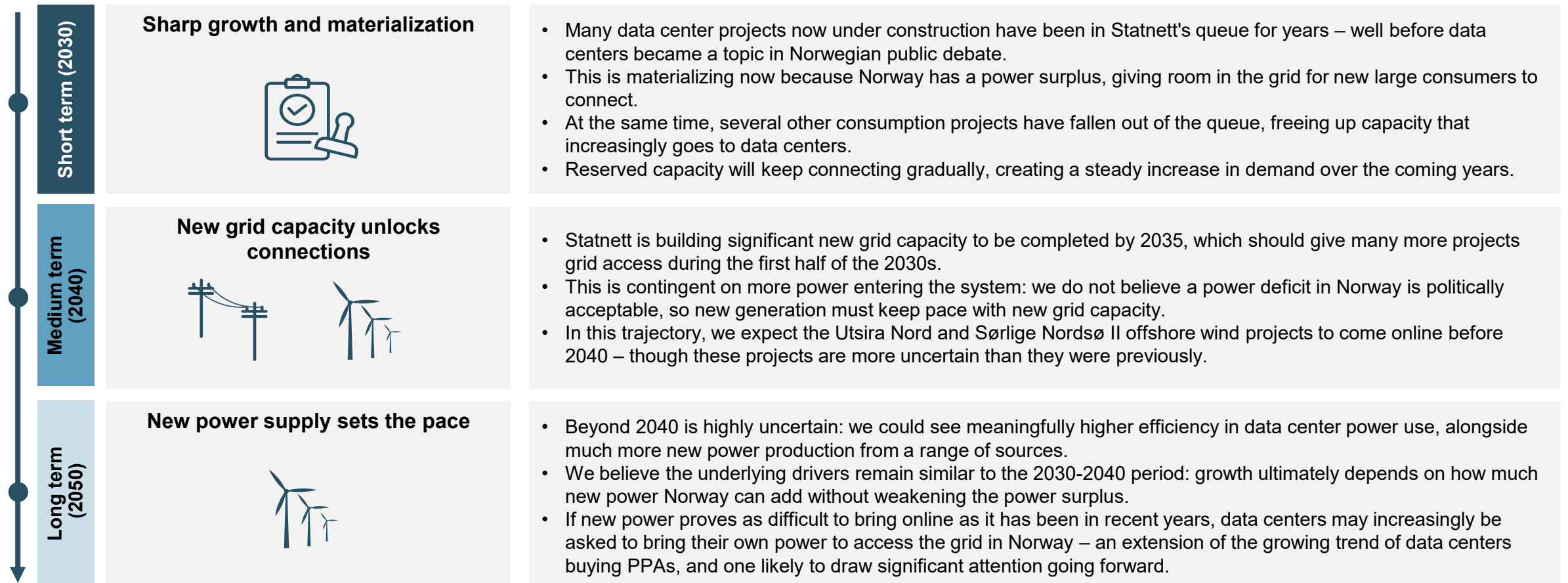
Slower growth due to limited new power production and potential political opposition

Development after 2035 is uncertain, with no reserved capacity scheduled past the mid-2030s. Grid capacity should free up as the target grid nears completion, but expansion will be constrained without new generation. Rising consumption may also spark political opposition.



Data center demand is growing and we expect power supply to be the main bottleneck in the long term

In the short, medium and long term, the key driver behind data center growth shifts – from projects already in the queue materializing today, to new grid capacity in the 2030s, to how much new power Norway can add beyond 2040



Our projections have higher growth expectations in data center consumption than previous analyses, based on an updated assessment of projects with reserved capacity

Today – 2030

We are somewhat above consensus

Before 2030, our outlook is somewhat higher than others, primarily reflecting projects under construction with scheduled commission and subsequent ramp-up before 2030.

2030 – 2035

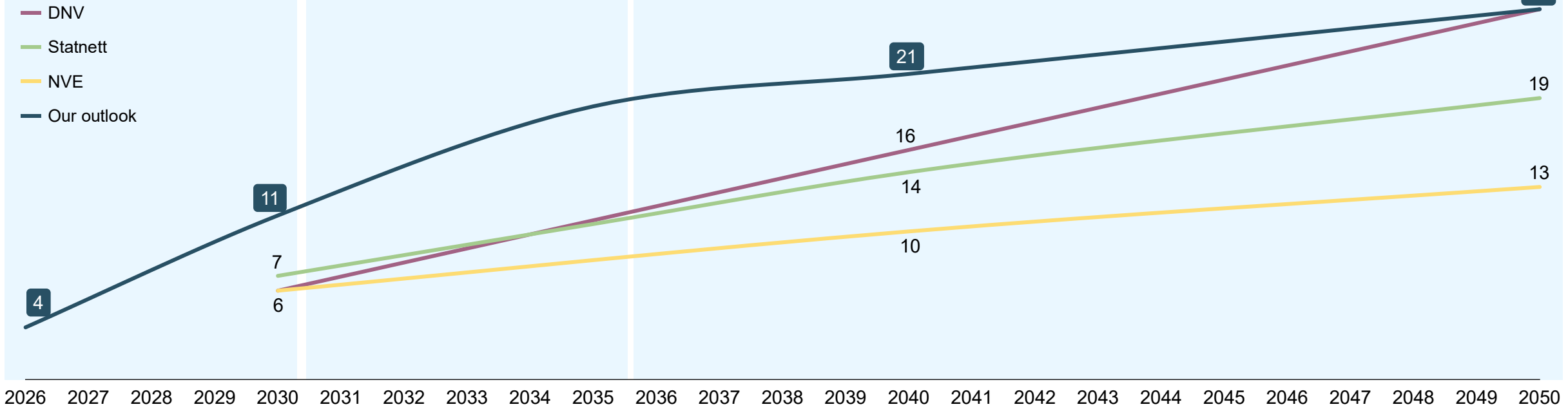
We expect stronger growth than others

Based on an assessment of projects with reserved capacity THEMA anticipates a continued strong growth in the years following 2030. More expected growth than others due to higher confidence in realization of reserved capacity.*

2035 – 2050

We assume the same development pace as others

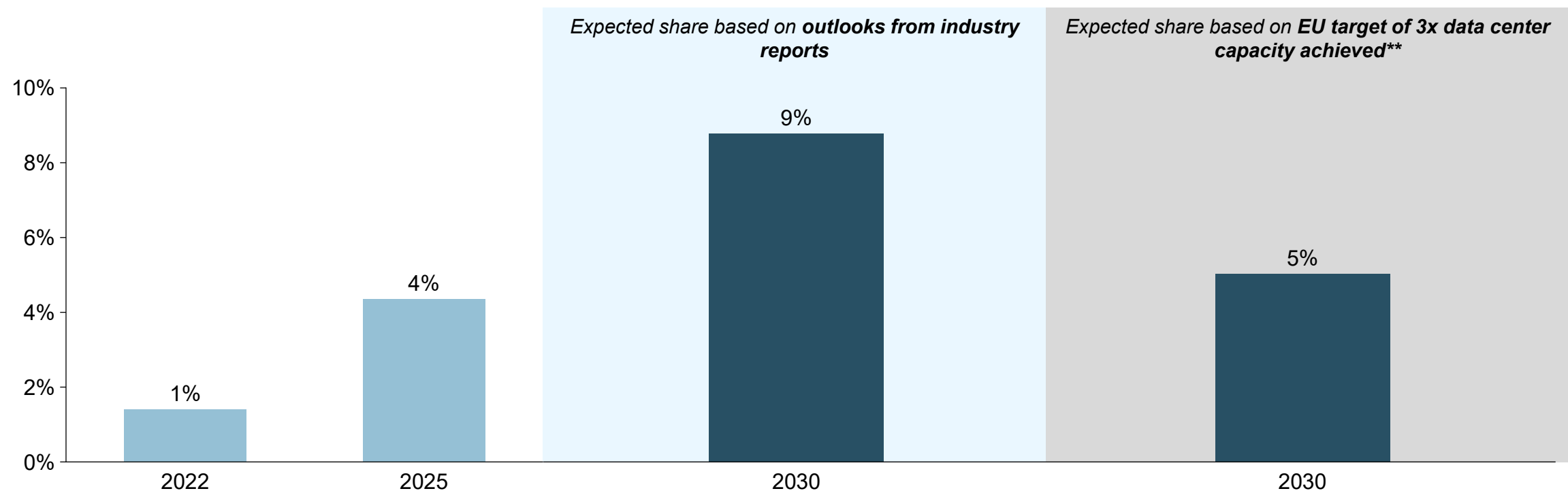
Towards 2050, there are significant uncertainties which could greatly influence how much consumption ultimately materializes. Beyond 2035, THEMA's projected growth rate aligns with that of other reports; however, owing to the substantial increase prior to 2035, absolute consumption levels remain higher throughout the period. Consistent with Statnett and NVE, THEMA anticipates slower growth beyond the medium term. Both THEMA and DNV project consumption of 25 TWh by 2050; DNV, however, assumes linear growth across the 2030–2050 period, whereas THEMA anticipates that a greater share of consumption growth will be realized in the shorter term, with the development of new power generation capacity as one of the main uncertainties over the longer term.



Sources: NVE (2024), DNV (2025), Statnett (2025) *The volume of reserved capacity is continuously growing, which may contribute to the comparatively lower consumption projections put forward by others.

Norway is set to take a larger share of Europe's data center growth toward 2030s. However, compared to the EU target, the Norwegian share remains nearly unchanged from today's level

Norwegian data center consumption as a share of expected European data center consumption*

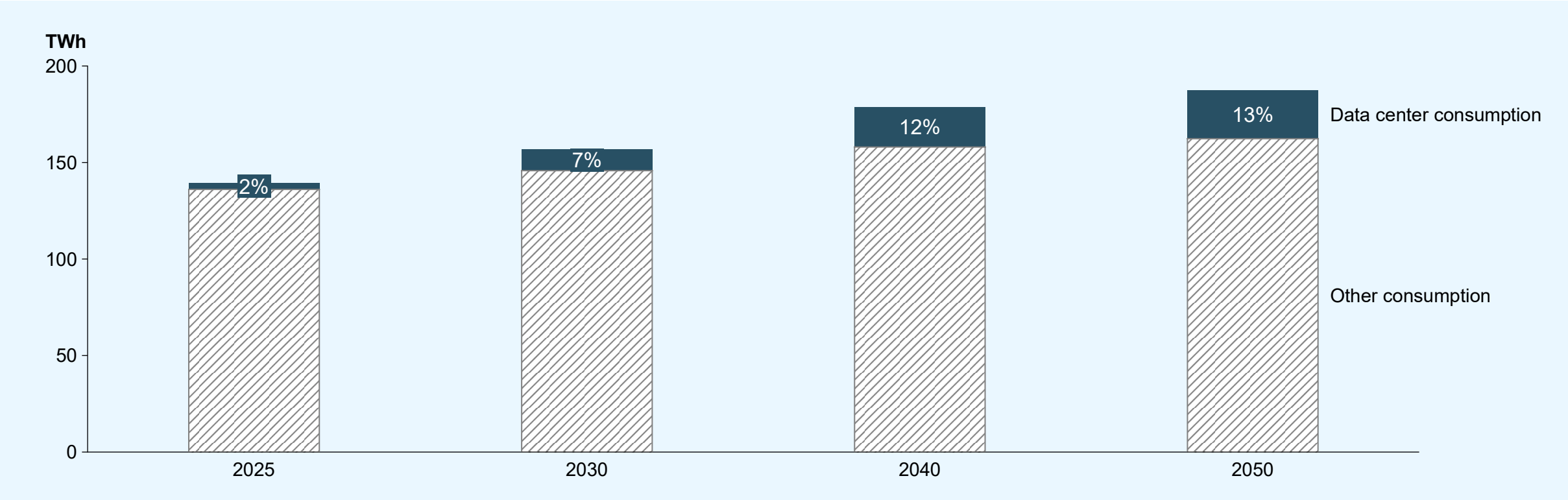


Drivers include constraints in the traditional FLAP-D markets, combined with several large project under development in Norway, many scheduled to come online before 2035, and especially before 2030. In total, this means Norway will capture a larger share of datacenter demand towards 2030, with growth slowing down closer to 2035.

Source: *European projection is based on DNV ETO 2025; EU (2026) Strategic Roadmap ;**Consumption calculated using 8736 hours and a capacity factor of 70%, in 2025 capacity was 12 GW, tripling of this capacity gives 36 GW in 2030.; Norwegian power consumption numbers are based on THEMA analysis 2026.

Data centers are the main driver of Norway's rising power consumption, and are set to claim a growing share of the total

Data center share of total power consumption in Norway, 2025-2050



The increase is front-loaded: data centers' share nearly quadruples by 2030 and keeps climbing through the 2030s, before leveling off as growth slows down after 2040

Source: THEMA Market Outlook, May 2026



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