

Today!

Webinar



Energy Flexibility Explained - What SMEs Should Know

 23rd Feb 2026

 12:00 - 13:00 CET

Part 1 of Every1's *Digital Energy for Everyone* Webinar Series



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the European Union





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About Every1

- 4-year project (2022-2026)
- Funded by the European Union's Horizon Programme for Research and Innovation (2021-2027)
- Every1 Knowledge Hub, Networking + Matchmaking
- 11 Partners from 9 EU Countries



INESCTEC



Th!nk E



Steinbeis
Europa Zentrum



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*Every1 enables inclusive participation in the **digital energy transition** by identifying knowledge gaps, developing accessible learning pathways, and strengthening stakeholder collaboration.*

*Through **capacity-building and knowledge sharing**, we empower citizens, policymakers, and industry to navigate and shape the evolving energy landscape.*



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Agenda

- Introduction
- The changing electricity system
- Balancing and Day ahead market
- Dynamic prices and how to reduce your costs
- Flexibility in your processes
- Your energy buffers
- Use an EMS to convert your flex into Euros
- Conclusions



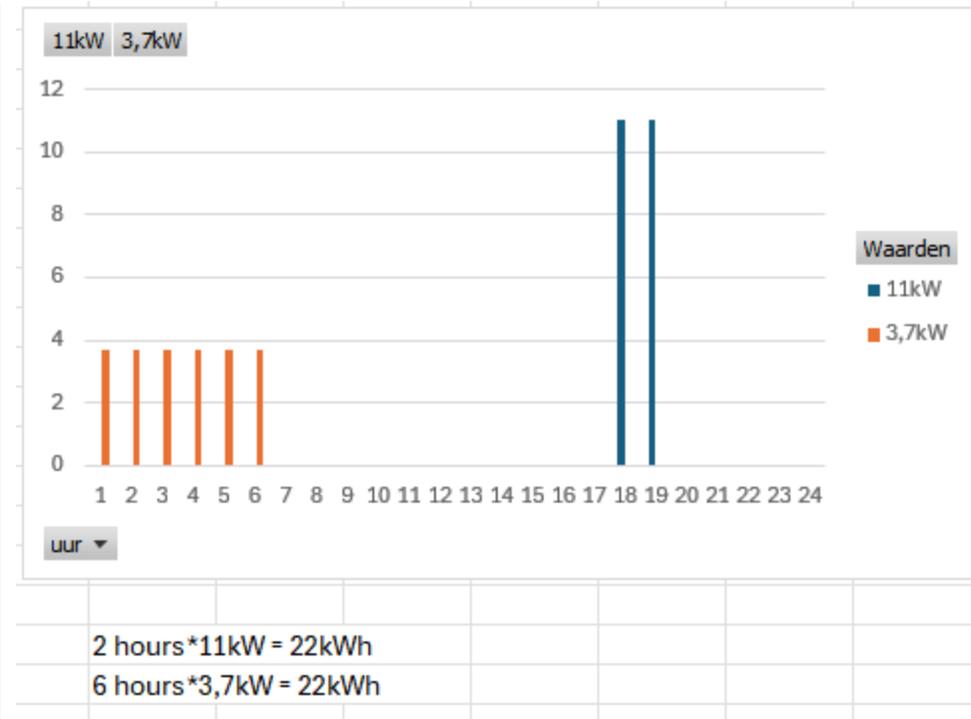
Disclaimer

- The focus is to learn some background principles of the electricity system, to understand that flexibility in energy consumption is relevant and valuable. Principles are sometimes simplified to ease understanding.
- Examples are sometimes based on the residential context, to make it easier to understand for a non-energy audience.
- This presentation shows the mechanisms and examples on the electricity markets in Belgium and the Netherlands. In most European countries the same or similar mechanisms exist.
 - ENTSO-E, the European Network of Transmission System Operators for Electricity tries to bring standardisation across Europe.



Introduction: Electricity – kW versus kWh?

- Power: kW
- Energy: kWh
- **A device that consumes 1kW during 1 hour consumes 1kWh**
- A home battery:
 - delivers power at 5KW--- how fast?
 - contains 10kWh of energy --- how much?
- An EV can charge 22kWh of energy by:
 - Charging at 11kW during 2 hours
 - Charging at 3,7kW during 6 hours
 - ... or faster: at 150kW during 0,15 hours (=9 minutes)



➤ **Move 20kWh to another time = Flexibility = euros**

Introduction: Yearly cost – Typical SME in Belgium

- Daytime usage 17.500 kWh
- Nighttime usage 12.500 kWh
- Peak offtake 18kW
- Statistical mix of energy contracts

Prijsonderdeel	Bedrag	basis
Energiekost: Energiecomponent afname	€ 4 295,49	57% kWh
Energiekost: Energiecomponent injectie	€ 0,00	0% kWh
Energiekost: Kosten voor groene stroom & WKK	€ 448,29	6% kWh
Energiekost: Vaste vergoeding	€ 64,95	1% vast
Nettarieven: Distributie - Databeheer	€ 13,16	0% vast
Nettarieven: Distributie - Netgebruik	€ 863,64	12% 80% kW + 20% kWh
Nettarieven: Distributie - ODV & toeslagen	€ 920,69	12% kWh
Nettarieven: Transmissie - Netgebruik	€ 262,60	4% kWh
Nettarieven: Transmissie - ODV & Toeslagen	€ 47,40	1% kWh
Heffingen en BTW: BTW	€ 0,00	0% %
Heffingen en BTW: Heffingen	€ 577,72	8% kWh
Totaal	€ 7 493,94	

Energy component

Peak grid usage component

Prijzenrapport 2024 VREG

<https://www.vlaamsenutsregulator.be/publicaties/rapp-2025-08>

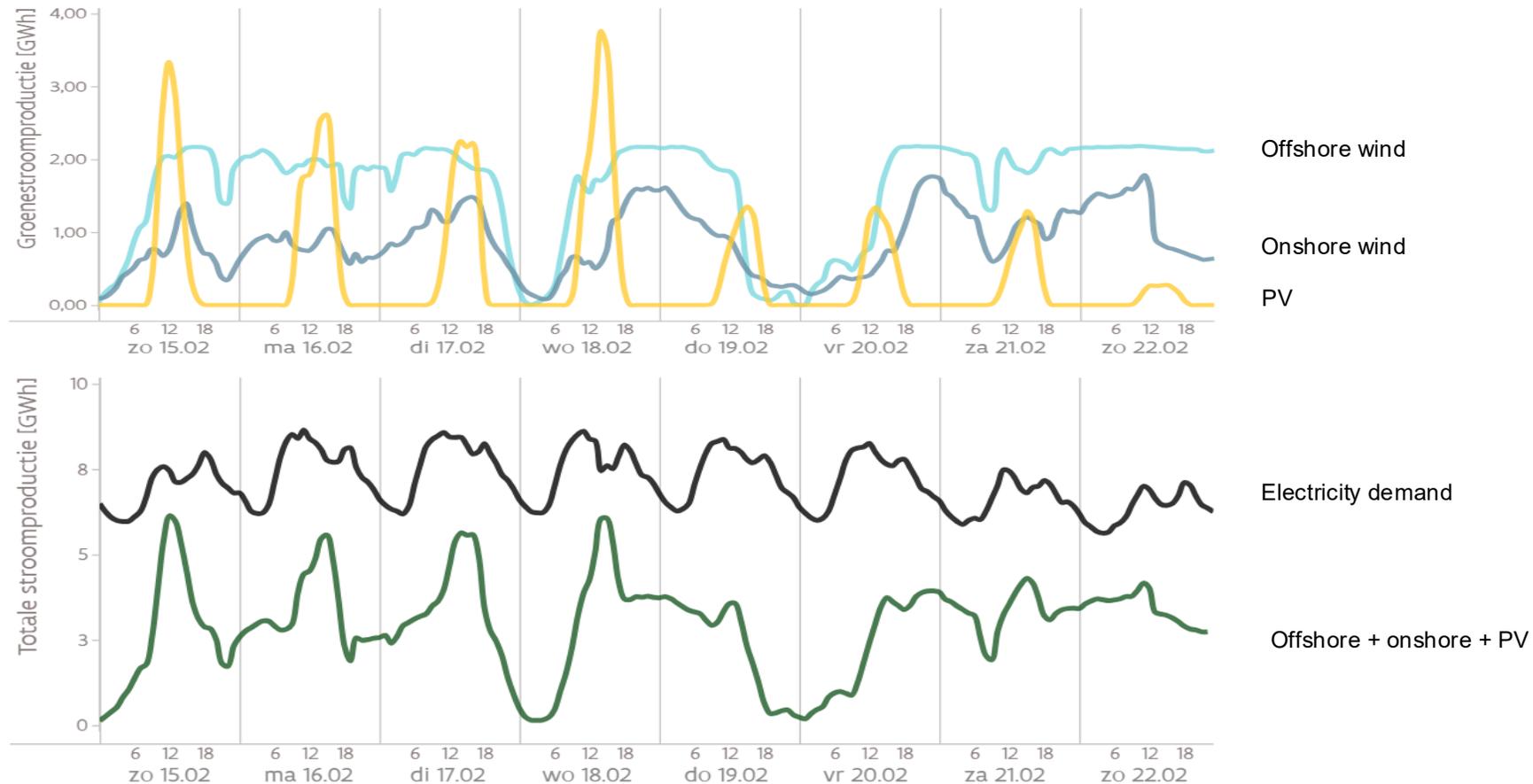
The changing electricity system

- From central production with controlled generation...
 - Production adapted to consumption
 - ... to decentral, less controlled (renewable) production
 - Consumption adapts to (prices of) production
 - Growing renewables
 - Intermittent generation
 - Forecasting of sun and wind becomes better and better
- **With the increase of renewables an increase of flexibility in the electricity system is needed to keep the balance.**

The changing electricity system - Flanders

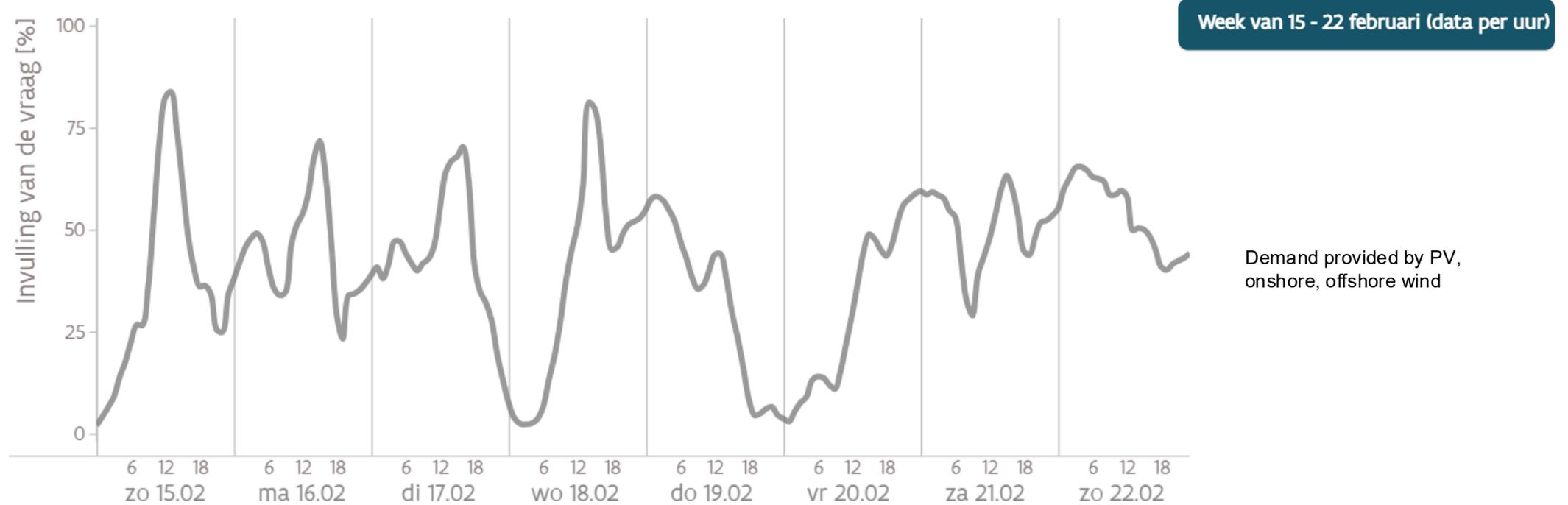
<https://apps.energiesparen.be/stroomvoorspeller-grafieken>

Week van 15 - 22 februari (data per uur)



The changing energy system - Flanders

<https://apps.energiesparen.be/stroomvoorspeller-grafieken>



- **2% - 85% of demand is covered by renewables**
- **The inverse graph is the residual load on the transmission grid**

The changing energy system – residual load Belgium in August

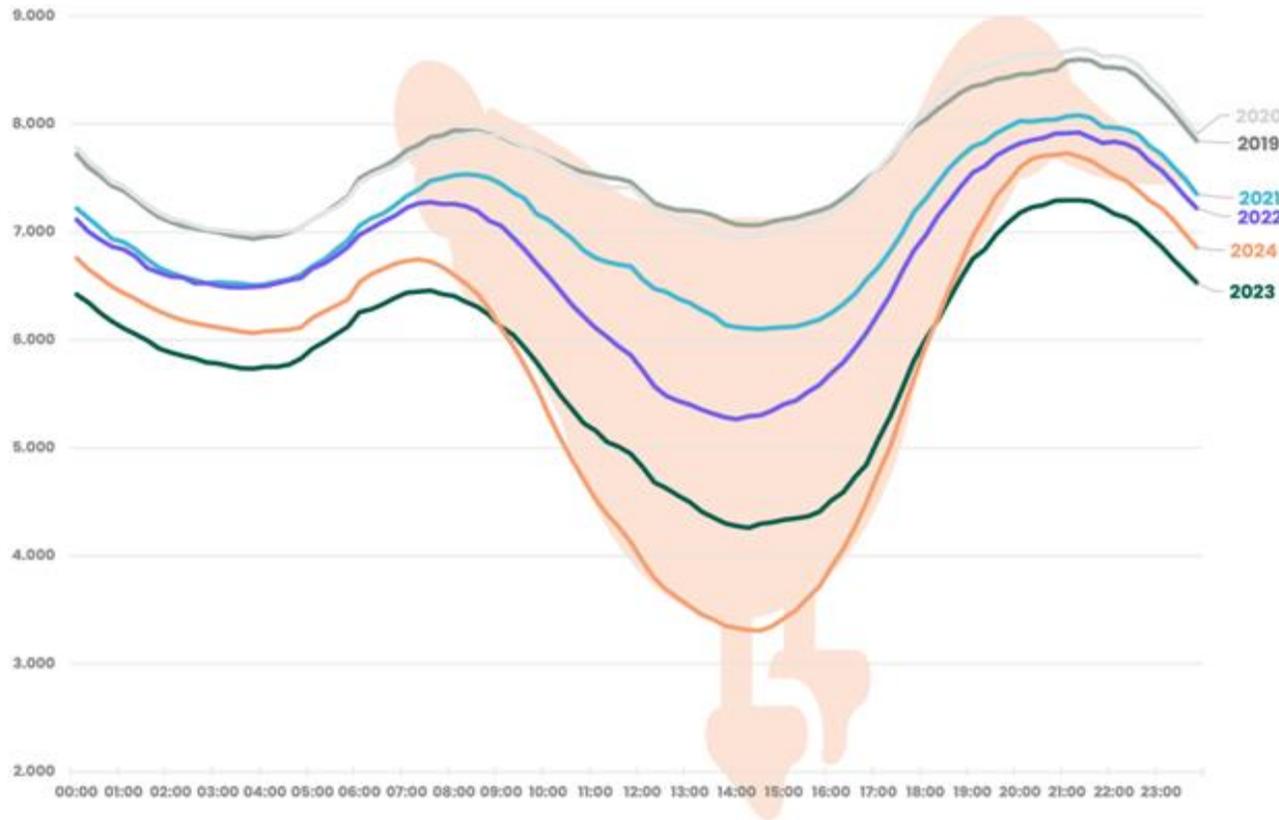
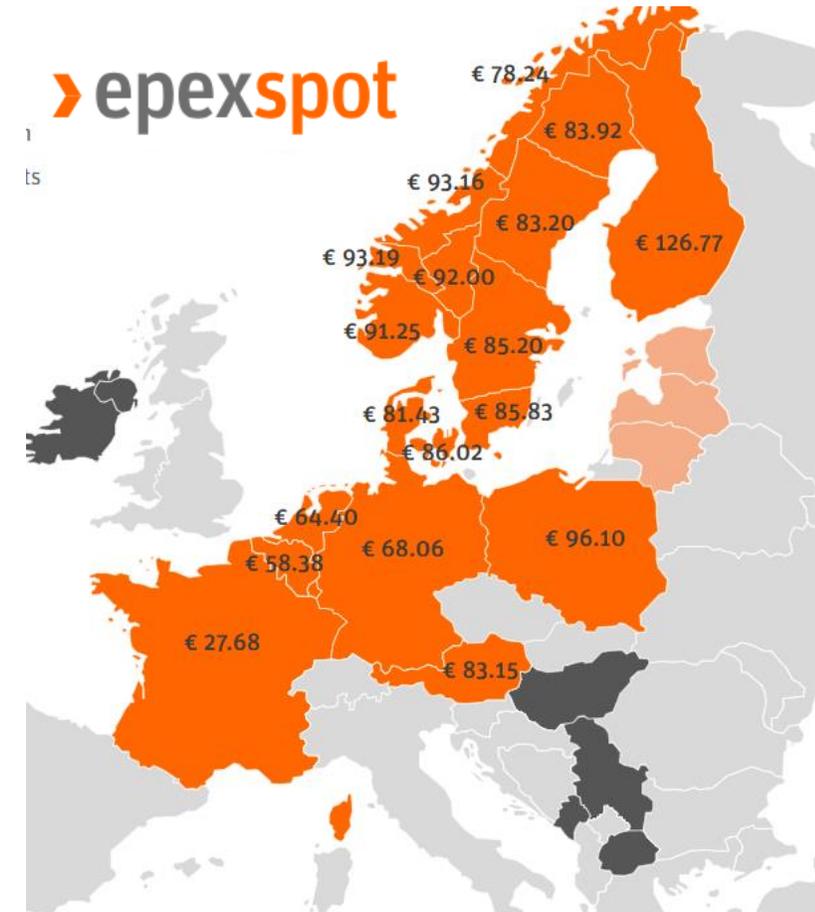


Figure 1: Average daily Belgian grid load in August. Data from Elia.

- Load on the transmission grid (without decentral RES)
- Deeper valley, steeper ramp up (evening peak)
- Strong challenge for the TSO (Elia)
- **Increasing need for flexibility**

Day Ahead market – balance in planning

- Need: supplier portfolio is planned in balance
- Balance responsible party (BRP):
 - Production estimate
 - Consumption estimate
 - Create market offers to sell or buy blocks of energy for every quarter of the next day
- EpexSpot Day Ahead Market:
 - Order book closing at 12:00
 - Auction between supply and demand
 - Results at 12:40 PM: price per hour/quarter
 - Suppliers (BRPs) must submit their balanced portfolio for the following day to the TSO: quarterly production, consumption, use of interconnections



5-115€/MWh means 0,005-0,115€/kWh

Day Ahead

Auction > Day-Ahead > SDAC > 15min > BE > 23 February 2026

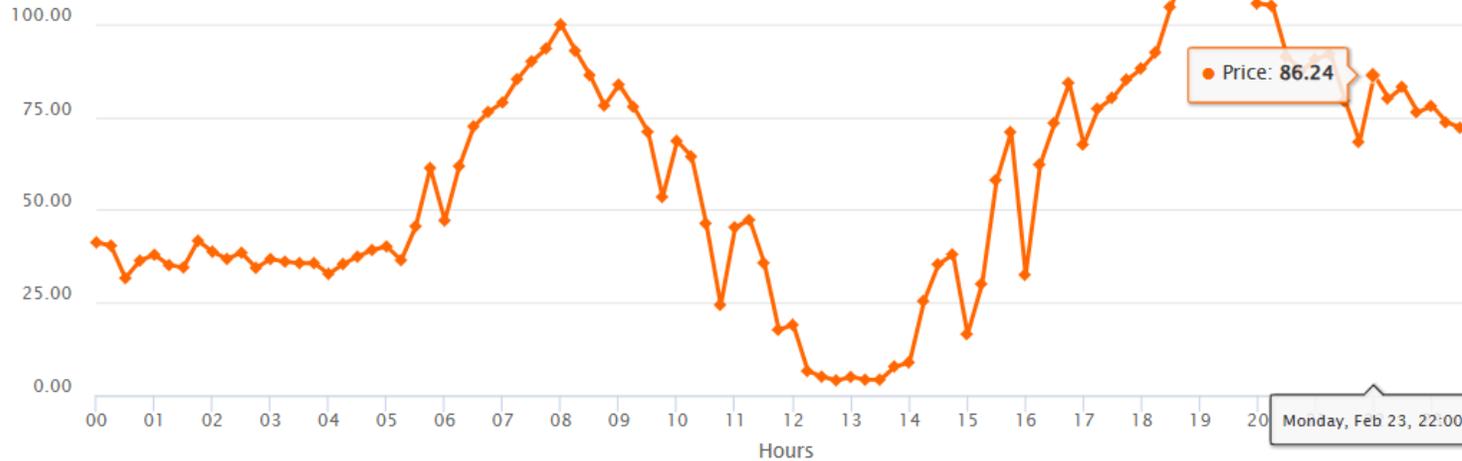
Last update: 22 February 2026 (12:56:21 CET/CEST)

Price

€/MWh

Price

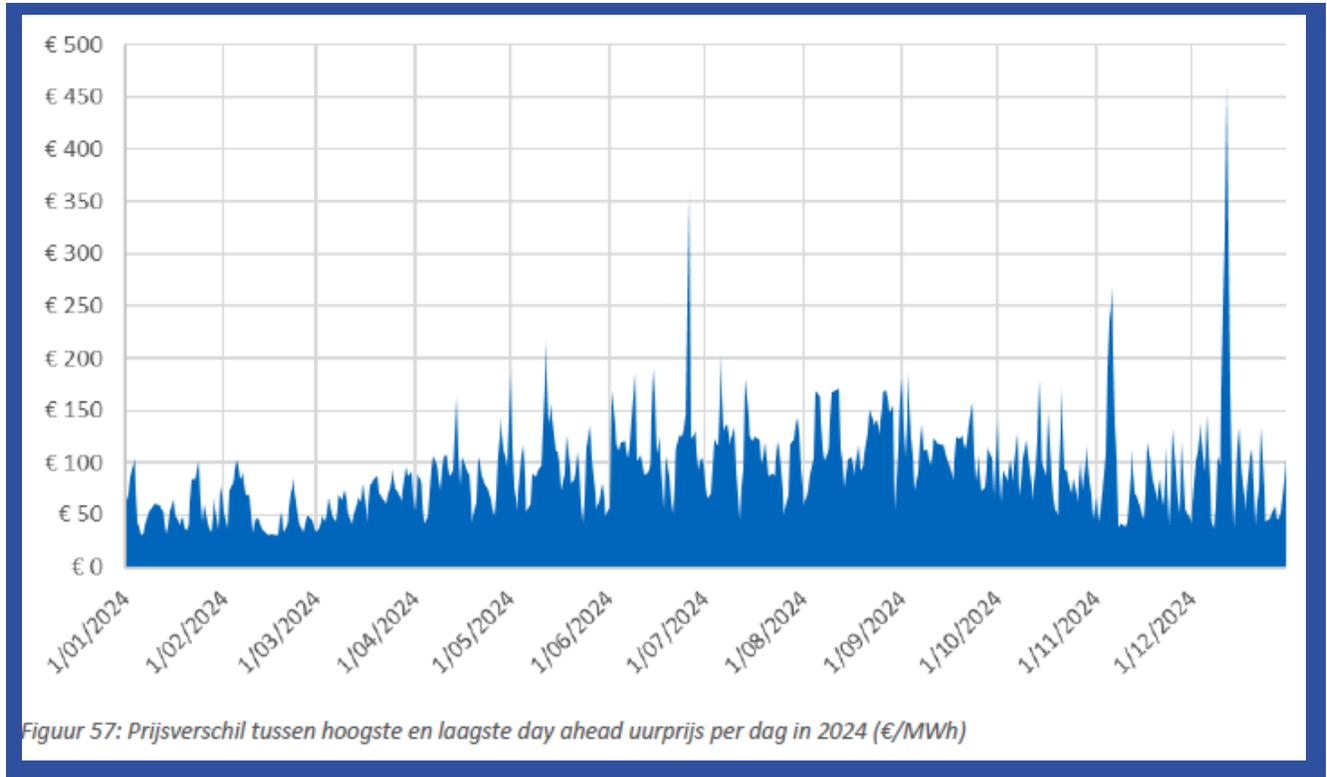
From 5 to 115 €/MWh
on a Monday



<https://www.epexspot.com/en/market-data>

Balancing - Day Ahead – volatility creates opportunity

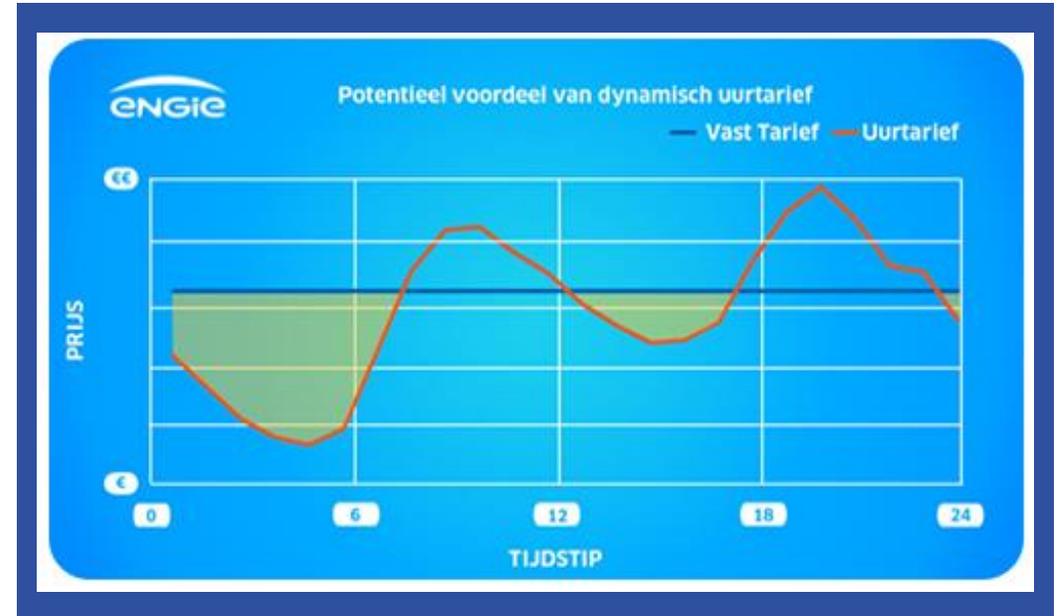
- Price differences between the highest and lowest day-ahead hourly prices per day in 2024.
- Spread:
 - 75% of the days >€60
 - 50% of the days > €88.5
 - 25% of the days > €115
- **Daily savings potential by shifting consumption from the most expensive to the cheapest hour of the day.**



[Prijzenrapport 2024 VREG](#)

Day Ahead market → Dynamic pricing

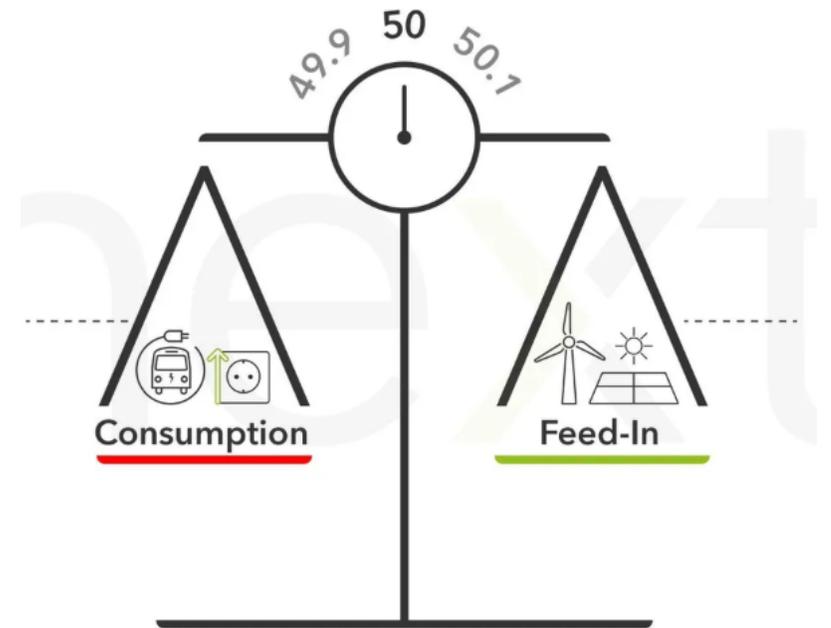
- Dynamic price contracts
 - as a pricing formula for consumers
 - every quarter a different price
 - DA price + margin for supplier
 - Allows to optimise energy cost!
 - = implicit flexibility
 - Arbitrage between cheap and expensive hours
- €
- Remember: energy cost is 57% of the electricity invoice
 - Planning consumption for the next day



<https://www.engie.be/nl/dynamic-tariff/>

The day itself - real time value

- Reality is constantly different from prediction
 - Production: wind a little earlier, cloud lingers a little longer, power station failures, grid or interconnection problems , ...
 - Consumption: less consumption due to production downtime, heavy industrial process incident, ...
- Different mechanisms to control the balance
 - EPEXspot intraday market
 - TSO: frequency control and reserve markets (FCR, AFFR, MFRR)
 - Typically through aggregator-services
 - BRP: imbalance market
- = Explicit flexibility
- Supporting the DSO in grid congestion issues
 - Mechanisms/markets not yet mature in all countries
- value stacking
 - Your flexibility (ex: battery) can participate in multiple markets to create extra revenue



<https://www.next-kraftwerke.com/knowledge/balancing-group>

Where is flexibility in your processes?

- EV charging at the SME for multiple cars
 - Smart charging strategies
 - optimise for self consumption
 - use low dynamic tariffs via an EMS
 - Load balancing between cars: optimize grid connection usage (physical and agreed power)
 - Attention point: priority versus flex
 - Easy to implement because charging stations are new devices

 - Industrial processes:
 - Thermal: hot water, steam, oven, sterilization, fridges and freezers, ...
 - Process: pumping, batch processes, in-factory battery-powered vehicles and devices, ...
 - Smart control on low dynamic tariffs or via EMS
- Also consider personnel (cost) when changing processes to be more flexible
- Dynamic energy contracts have no fixed monthly energy budgets → discuss with financial manager

Less flexibility in your processes → use energy buffers

- Some consumption can not be moved to another time:
 - If you want to prepare dinner, you need the appliances to cook
 - If you want to watch TV you will not align with PV production time
- Some processes are difficult or costly to change
- In those cases you can use energy buffers
 - as temporary storage between the moment of excessive (renewable) production or offtake and the moment of effective consumption

Energy buffers: Thermal storage



- Process related:
 - Hot water tank
 - Comfort = enough hot water when you need it
 - (Trade off between energy efficiency and energy cost)
- Building related:
 - (Sanitary) hot water tank
 - Comfort = enough hot water when you want to take a shower;
 - Underfloor heating (accumulation – inertia)
- Thermal storage is much cheaper than electrical storage

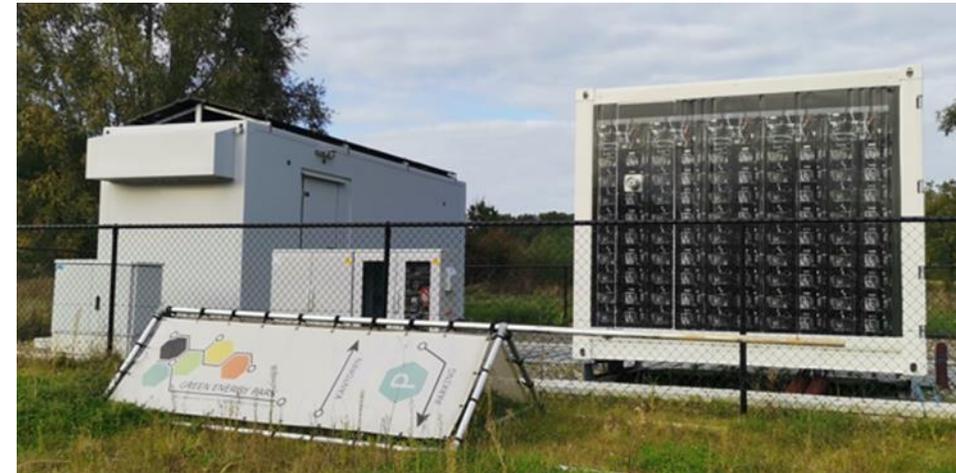
<https://www.zonneboileradvies.be/zonneboiler-places/groot-stockvat-zonneboiler/>

Energy buffers: Storage in batteries or kilometres

- Industrial batteries
- Electric vehicle = Battery on wheels
 - Comfort = enough range to complete the following trips (until next charging session)

<https://www.greenenergypark.be>

<https://gocar.be/nl/autonieuws/auto-industrie/hoeveel-kost-een-battery-van-een-elektrijke-auto>

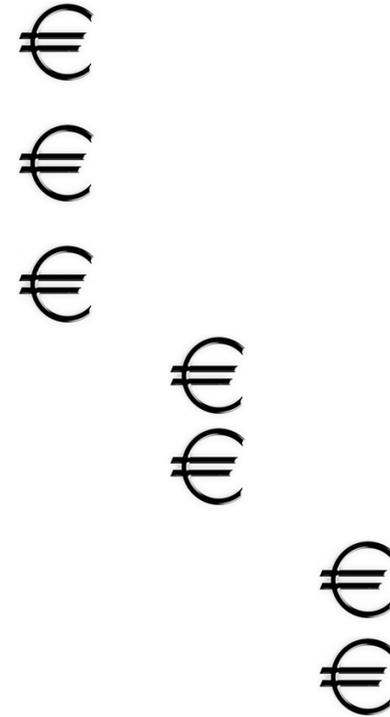


How? Use Energy Management Systems

- You can manually do basic controls:
 - Use timer, apps with start/stop functionality, ...
- To control energy consumption in a smart way, you need an Energy Management System (EMS)
 - Understand your consumption: monitoring
 - Data measurement
 - Visualisation, ex: apps of the solar inverter
 - Analysis
 - Control devices
 - Smart charging of EV or EV parking
 - Self consumption optimisation (functionality mostly included in hybrid inverters)
 - Smart charging of battery
 - Smart heating of Domestic Hot Water
 - Curtail PV injection when injection prices on the market are negative

Energy Management Systems create value

- Energy management systems can deliver real value in Euros:
 - Internal optimisation
 - Efficient energy management
 - Insight in (unneeded) consumption → energy efficiency
 - Self consumption optimisation
 - Use your own PV system's generated energy
 - Manage peak: reduce peak tariff on distribution/transmission cost
 - Dynamic price response
 - Smart control of consumption and energy buffers
 - To do arbitrage between cheap and expensive hours
 - Explicit flex market monetisation via FSP services:
 - to provide services to TSO (explicit FCR market)
 - To provide services to BRP (imbalance)



Conclusion

- Flexibility is needed in the system to cope with more and more renewables in the system
 - There will always be an incentive to adapt consumption to production or to use energy buffers
 - Switch to supply contract with dynamic pricing
 - Plan consumption based on Day Ahead / dynamic pricing
- There is quite some flexibility in most companies and households
 - Use it!
 - Control consumption via (semi-) automatic control → use an EMS
- The more flexible consumption the better:
 - Strategic advice: design your processes with as much flexibility as possible
 - Always maintain comfort or the function in processes
 - Or use energy buffers

Questions? Concerns?

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Coming up

Webinar



EVERY1



Cities, Citizens & Knowledge Gaps

 25rd Feb 2026

 12:00 - 13:00 CET

Part 2 of *Every1's Digital Energy for Everyone Webinar Series*



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01. **The upcoming challenges**

02. **The SME paradox**

03. **Getting started**

03. **The way to go**



The upcoming challenges



- 730 billion euro investments by 2040, and ~€1.2 trillion for transmission + distribution combined ([DG ENER](#))

- Flexibility requirements from ~11% of EU electricity demand in 2021 to ~24% by 2030 (and ~30% by 2050)

- Flexibility can save 30 billion annually in DSO grid investments ([smartEN](#))



DSO-specific challenges

Data availability

Most low voltage networks have limited metering and monitoring equipment. There is a lack of knowledge on the use of specific components in the grid.

Innovations with delay

Smart secondary substations, grid models, AI, improved monitoring and maintenance planning... is only emerging.



We know the grid congestion crisis is here. We know Member States' adequacy targets.

The question isn't 'what is flexibility?' The question is 'why is it stranded, and how do we extract it?'



Why do standard approaches fail in SMEs?

Industry can afford custom-made solutions, because it pays back due to their size.

Companies develop products for the housing market because of the uniform set-up and large market.



SMEs are diverse

Each SME is different in activity, size, and needs. Surface areas are not uniform, demands fluctuate more. Some are connected at low voltage, others on medium voltage.



SMEs lack expertise and must weigh off investments carefully

There is seldom enough budget for a specific energy and sustainability expert, but the more fluctuating market most SMEs operate in combined with often smaller margins, make investments not related to the core activities less evident.

Before we can unlock, we need to know what we can unlock

Power

How much can you change your load/injection?

Duration

How long can you sustain it?

Response time

How fast can you react?

Availability window

When can you provide it?

Reliability

How often do you deliver what you promised?



What is needed?



Standard interoperable solutions

Brand-agnostic and easy expandable solutions



De-burden with fair offers

Risk sharing and fair transparent offers sized to the SME at hand

The amounts are smaller: make smart choices

Implicit flexibility (bill optimization)

Dynamic tariffs / time shifting

Peak reduction (capacity tariffs)

Self-consumption optimisation

Collective self-consumption

Explicit flexibility (local grid services)

DSO congestion management

Alternative connection agreements

Local flexibility tenders/platforms

Explicit flexibility (system services)

Balancing services (via aggregator)

BRP imbalance optimisation

Wholesale/intraday trading (portfolio)

Where do you start?

Get your data

Think about your future

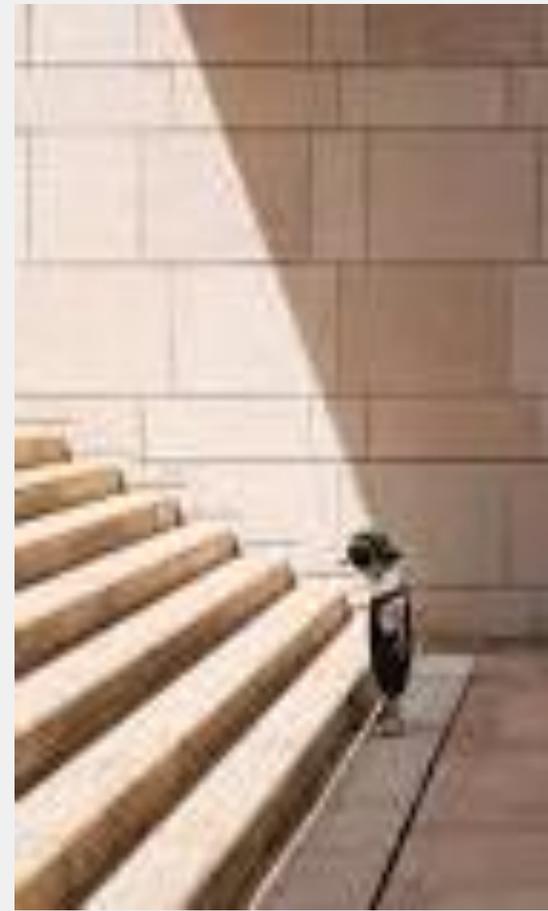
Find your peak drivers

Define boundaries

Pick 1 automation rule

Measure before and after

Decide: what is the ambition, do you do it yourself?



Value stacking

Upcoming congestion issues in low and medium voltage grids change the game

Dynamic Operating Envelopes and DSO flexibility markets are emerging





Bankability

= predictable cashflows + controlled operational risk



Minimum due diligence check

Clear baseline & measurement plan; Commissioning / performance test; Cyber & data governance (proportional); O&M plan: who monitors alarms & exceptions



Common failure modes

“Nice tech” without verification

One value stream only (no stacking)

Hidden cost for the SME

Aggressive penalties

Poor site selection (no real flexible load)



Bankability

= predictable cashflows + controlled operational risk



Financing patterns that work

ESCO / performance contracting

Leasing of hardware

Revenue-share with aggregator

Portfolio finance (many sites).

THANK YOU!

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