

# How energy storage targets will accelerate the rollout of energy storage solutions ?

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opportunities for lead batteries in  
energy storage

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# Europe is Moving Away from Centralised Energy Generation

Driven by Decarbonisation Goals → *Accelerated* by REPowerEU



## Centralised Dispatchable Generation

Increase and decrease  
production based on demand

‘Energy Transition’

## Today’s Climate Goals:

**2030**

- ✓ 40% RES → 45% RES proposed REPowerEU\*
- ✓ >1200 GW in 2030 wind+solar →  
**X3 today’s capacity**
- ✓ 55% GHG reduction

**Net Zero by 2050**



## Decentralised Variable Generation

Reliant on weather → need flexible,  
dispatchable back-up to fill the gaps

# What does This Mean for the Energy System Today?

Ambitious Goals raise Challenges for the grid

## Key Challenges:

1. Grid support and resilience
2. Rising curtailment
3. Reliance on fossil fuels to fill the gaps, often gas peakers
4. Need to shift energy over days, weeks, seasons



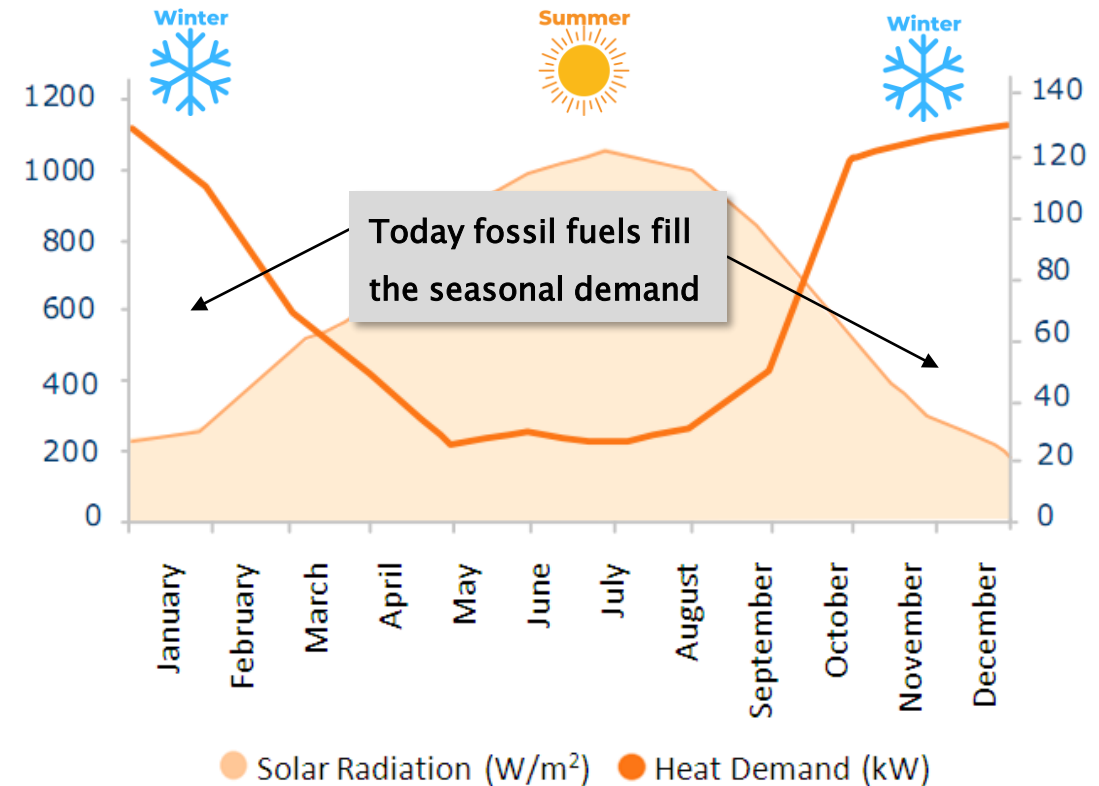
*Already seeing these challenges today...*

# Key Challenges in the Energy System Today

Reliance on fossil fuels to fill the gaps

## Seasonal timescale (longer durations)

- ✓ Traditionally fossil fuels meet seasonal demand especially heating
- ✓ Need a clean, dispatchable energy backup supply to meet longer duration needs

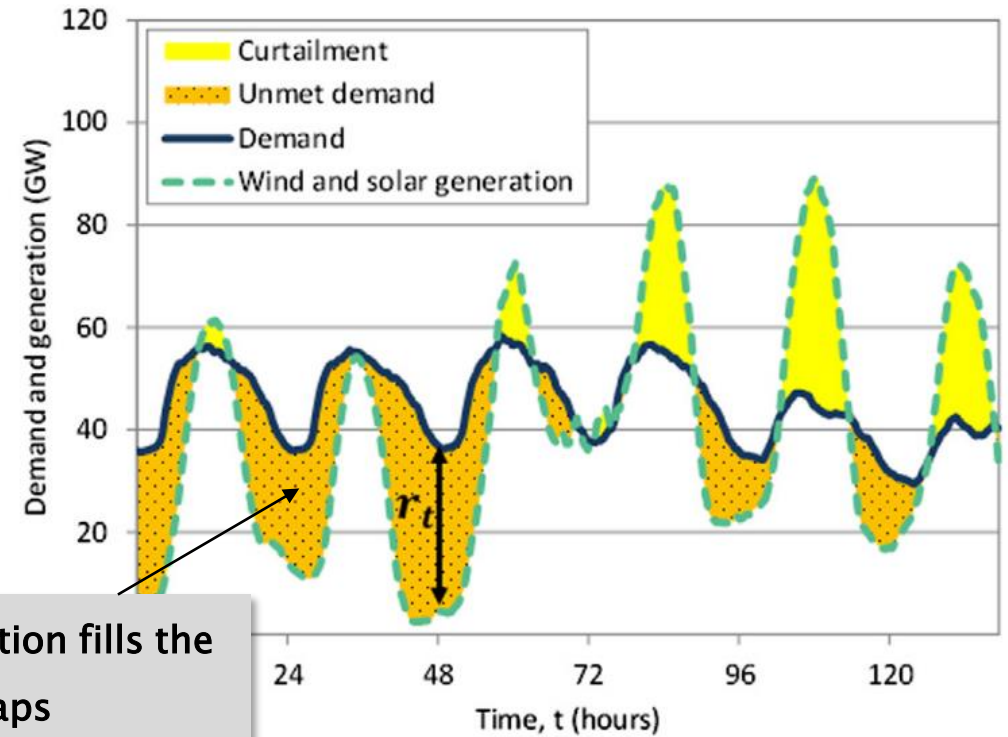


# Key Challenges in the Energy System Today

Reliance on fossil fuels to fill the gaps

## Daily timescale

- ✓ Balance variability of wind and solar production e.g. day/night cycle of solar
- ✓ Meet peak demand periods
- Lead-acid batteries can provide an efficient solution for short-term storage



Fossil fuel generation fills the unmet demand gaps

Fig. 2. Example of curtailment and residual demand in a power system.

# Two Types of Flexibility From Energy Storage

## Energy Storage

### 1. System Flexibility



one-directional  
System flexibility

Electricity flows in one direction and is not given back to the system as electricity – it is converted into another energy carrier.

E.g.: Power-to-heat, Power-to-gas, V1G etc...

### 2. Energy Shifting



bi-directional  
Energy Shifting

shifting electricity storing at times of surplus and giving electricity back to the system at times of deficit across different timescales (seconds, hours, days, weeks seasons) – to ‘fill the gaps’

E.g. Batteries, flow batteries, V2G, Flywheels, PHS, CAES, LAES, Supercapacitors, Gravity storage, Thermal energy storage (P2H2P) etc .....

# Energy Storage Offers a Solution to Key Challenges

Providing Flexibility and Energy shifting

## Key Challenges:

1. Grid support and resilience
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*How much energy storage?*

## Solutions with *Energy Storage*:

- ✓ Provide fasted response grid support services
- ✓ Store excess energy to be used when needed
- ✓ Provides a clean, dispatchable backup energy supply, reducing the need for fossil generators i.e. Natural gas
- ✓ Energy shifting over different timescales



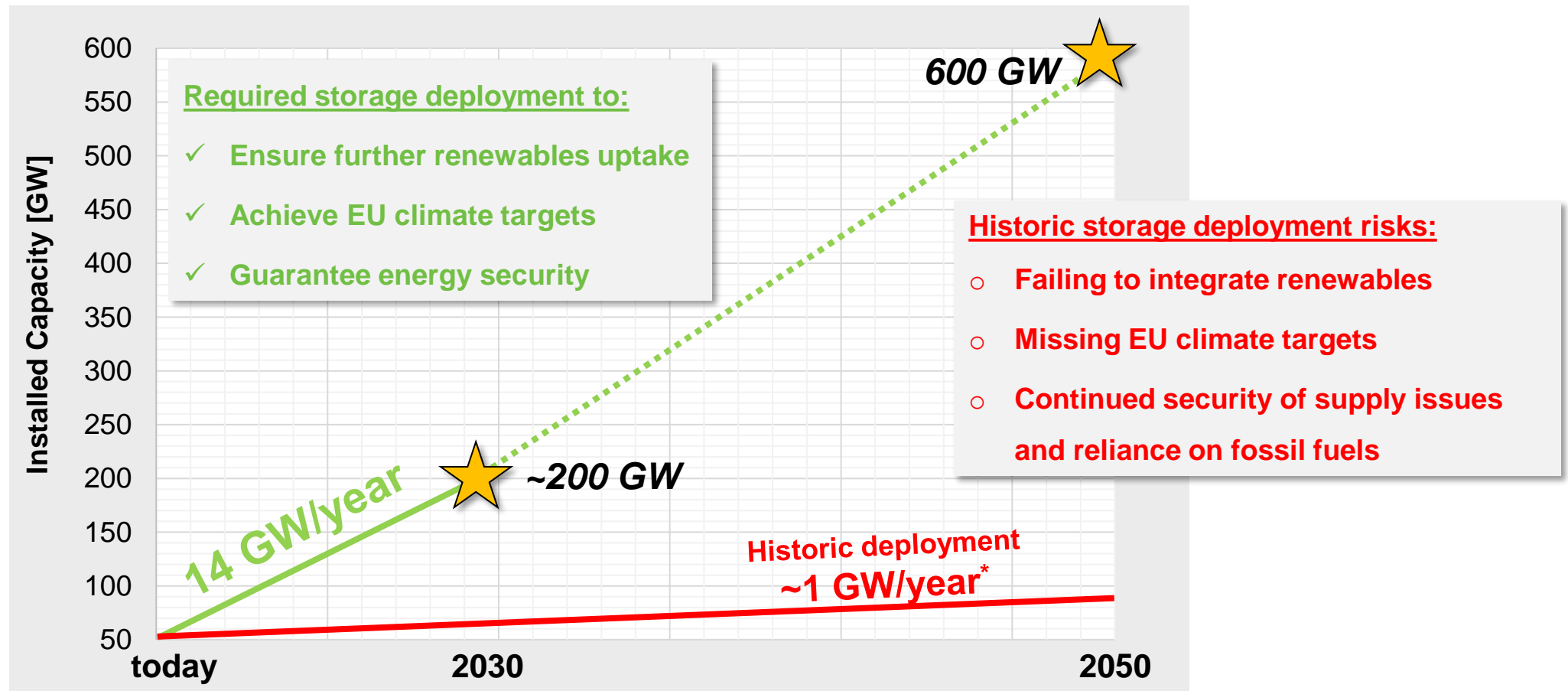
# Energy Storage Targets

## Already existing targets for Energy Storage 2030 & 2050

- ❖ Present-day regional targets existing in the US can inspire EU-wide targets
  - ✓ Energy Storage targets of 1.325 GW by 2020 were thus enacted in 2010 in California
  - ✓ More recently, the New York State has defined a deployment goal of 3,000 MW of additional storage by 2030
- ❖ National-wide ES targets are starting to appear in the EU
  - ✓ Spain, which is already targeting 74% renewables in the power sector by 2030, has long-term storage goals of 20 GW by 2030 and 30 GW by 2050

# Energy Storage Estimates 2030 and 2050

## Compared to Historic Market Deployment



# How can we reach these targets?

## Measures that need to be taken

- ✓ Set European energy storage targets for 2030 and 2050
- ✓ Eliminate double taxation and harmonise taxation at EU level
- ✓ Signal scarcity with appropriate prices while compensating grid supportive behaviour
- ✓ Tender specific curtailment minimisation products and allow for CCfD
- ✓ Ensure the permitting process for co-located (ES and renewable energy) infrastructure is efficient, short, and simple

## Talk to us.

We're ready to answer your questions.

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