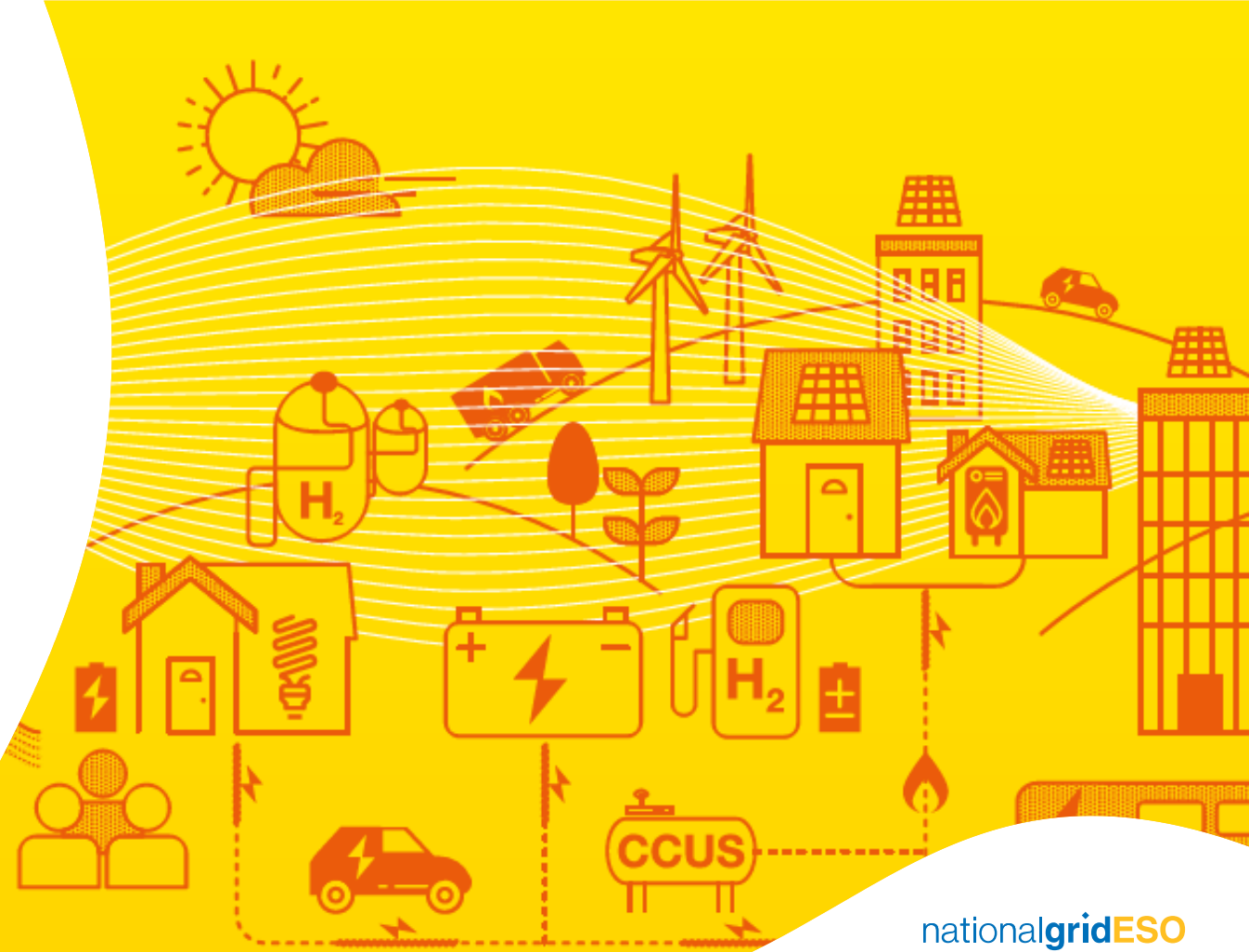
2019 Future Energy Scenarios

Electricity supply

Andy Dobbie

July 2019



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Modelling methods

Capacity projections

Capacity projections until 2050 for:

- Transmission generation
- Distributed and microgeneration
- Interconnectors
- Storage

Undertake a bottom-up approach based on assessment of individual projects and technologies that are informed by:

- Market intelligence
- Scenario framework
- Electricity dispatch analysis

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Electricity dispatch modelling

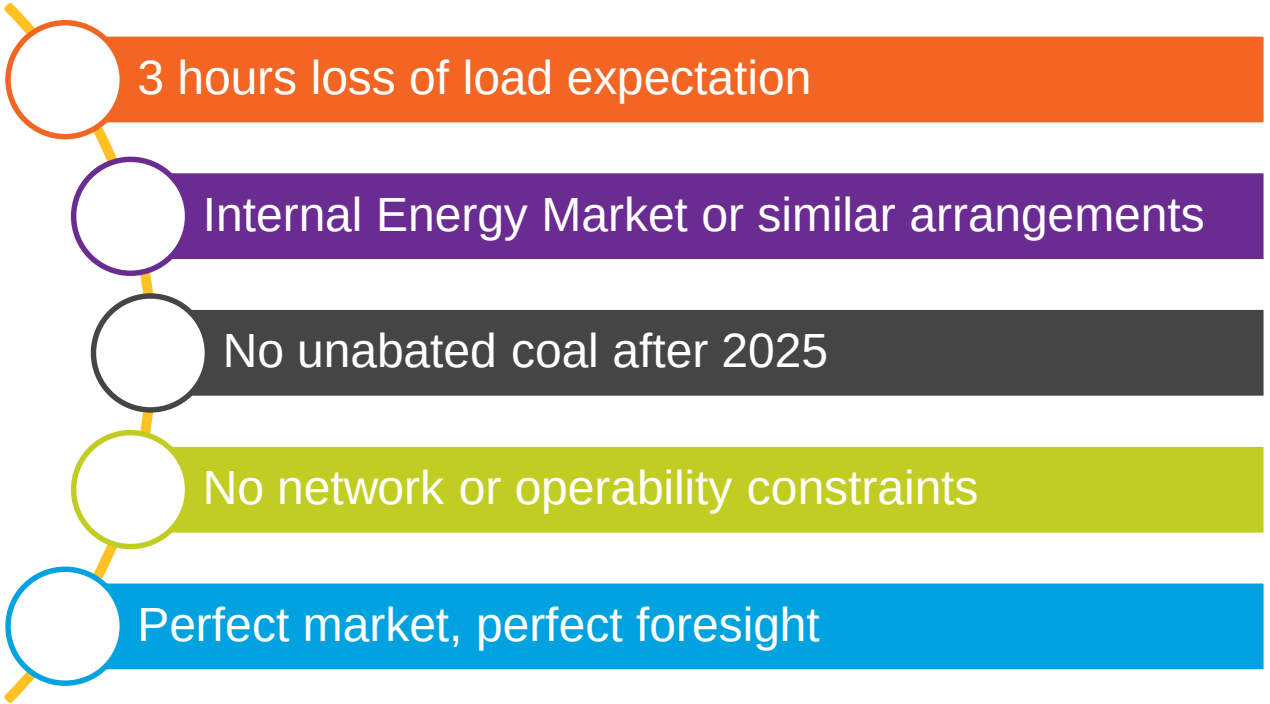
BID3 pan-European market model with FES data inputs:

- Capacity projections
- Demand
- Fuel prices

Economic dispatch model optimising the generation needed to meet demand at lowest cost with 1 – 6 hour granularity

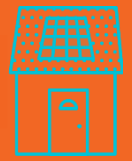
Scenarios from ENTSO-E and / or European TSOs used to model Europe

Summary of main modelling assumptions



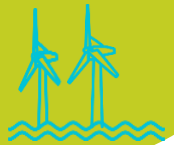
What's changed since *FES 2018*?

Reduced the maximum level of solar

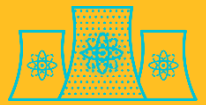


Reduced the maximum level of onshore wind

Strong growth of offshore wind in all scenarios



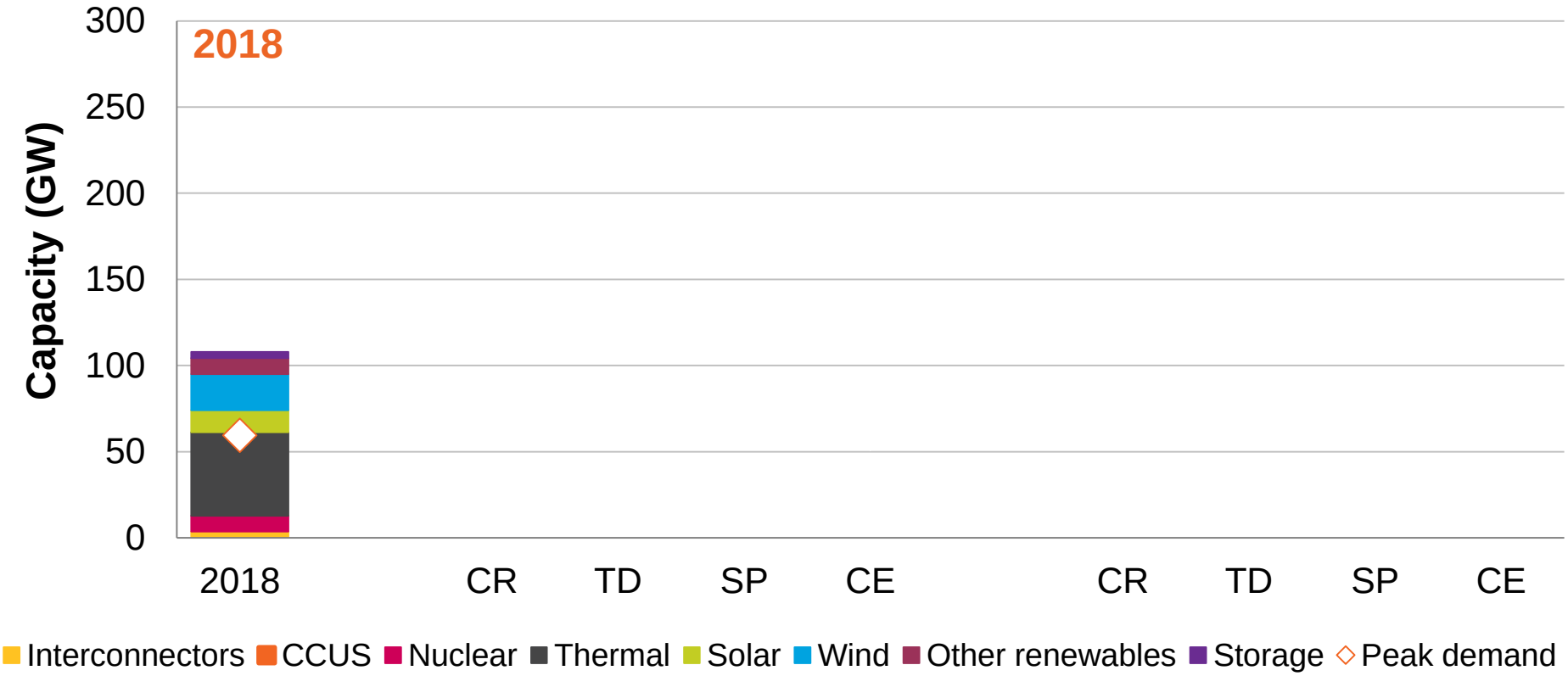
Revised nuclear projections downwards



Strong growth of storage in all scenarios

Data for the Five Year Forecast

Installed generation capacity



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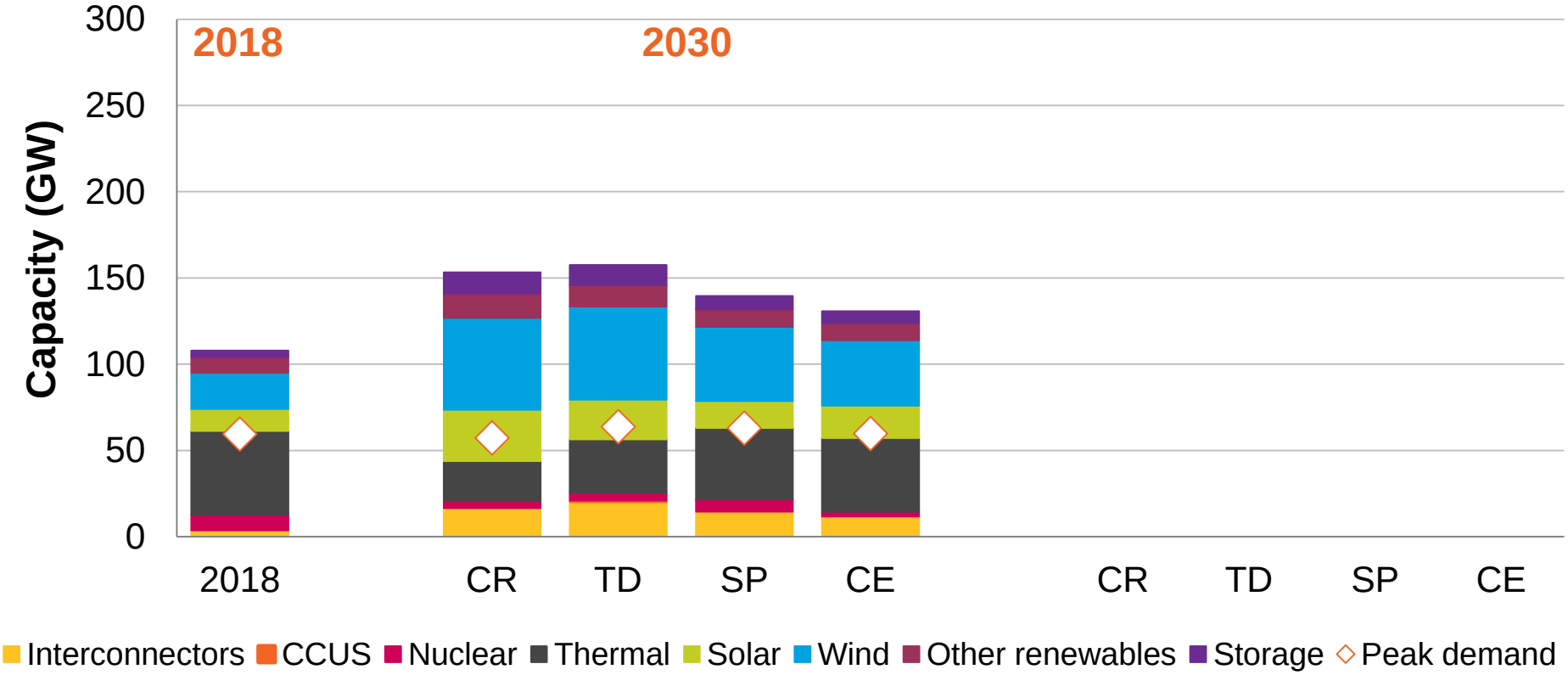
Installed generation capacity



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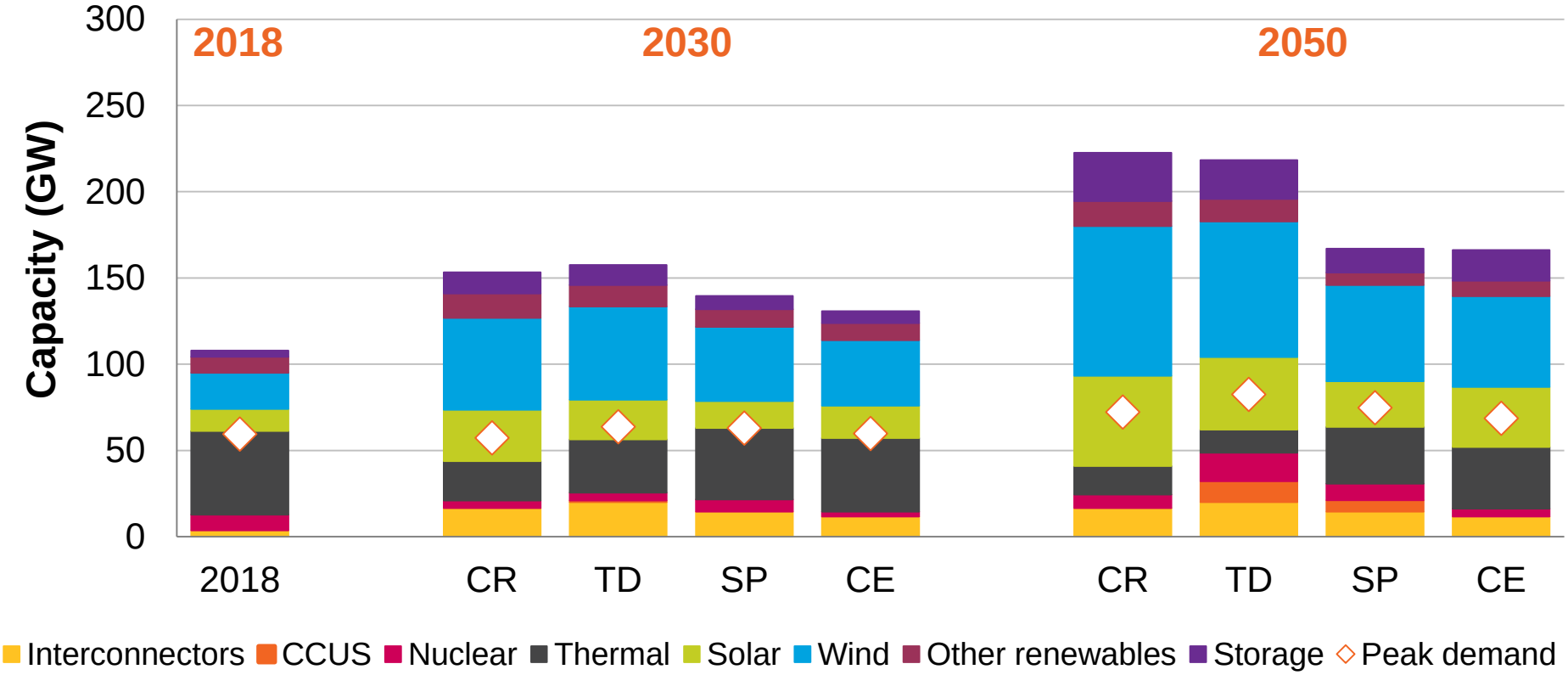

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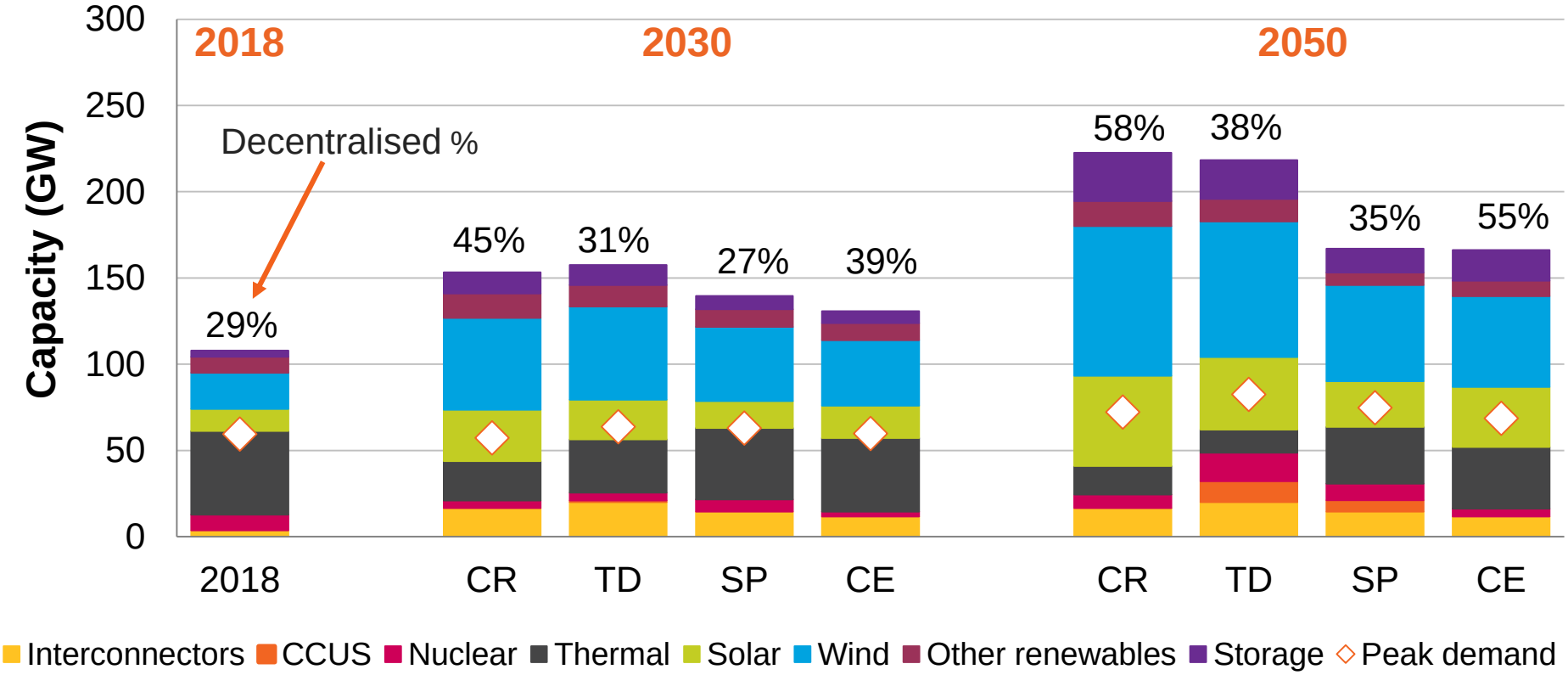

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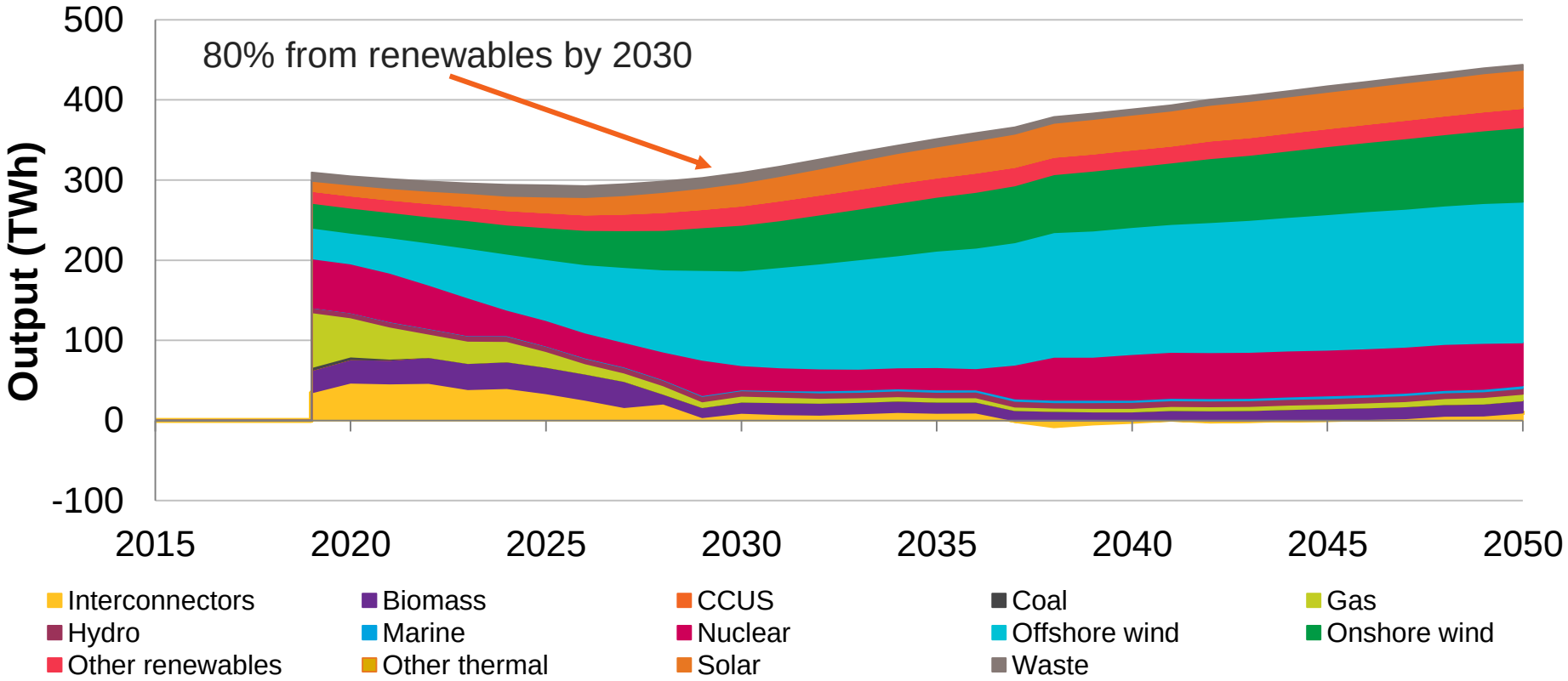
Generation output: Community Renewables



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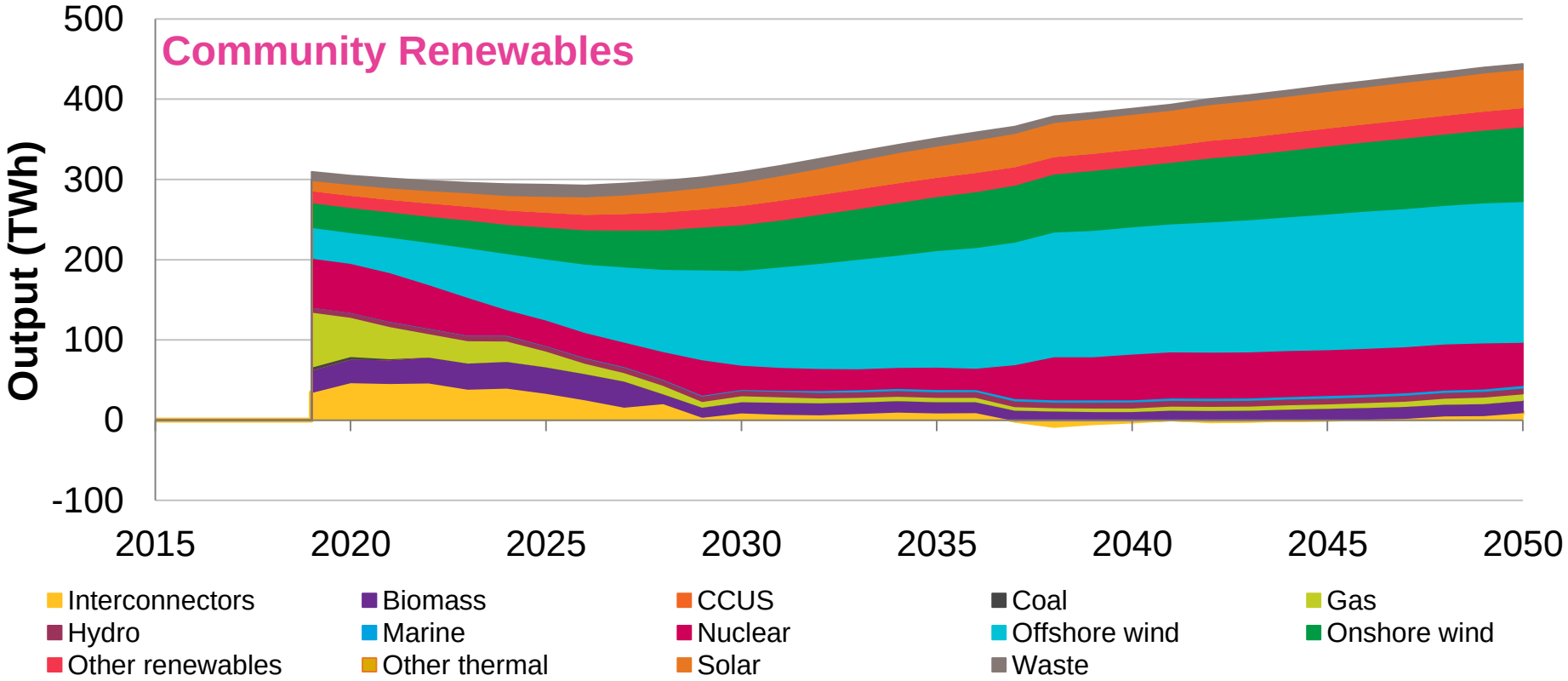
Spotlight: Balancing a system with high renewables



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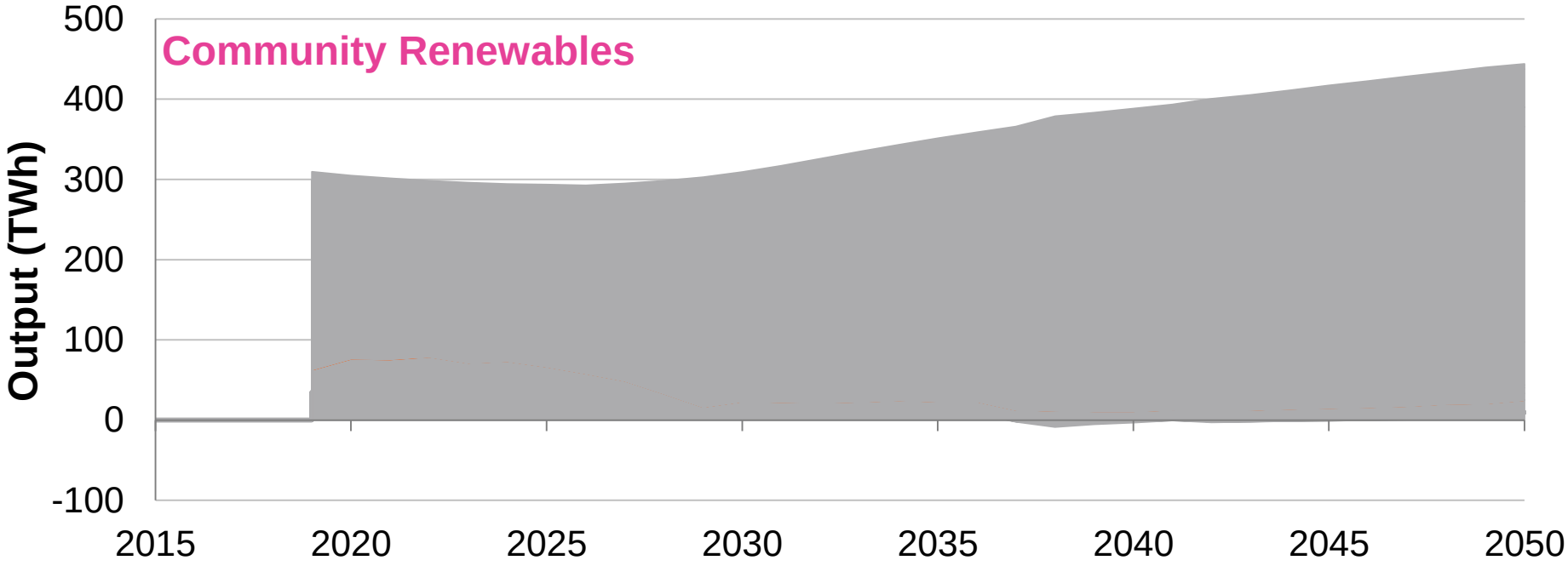

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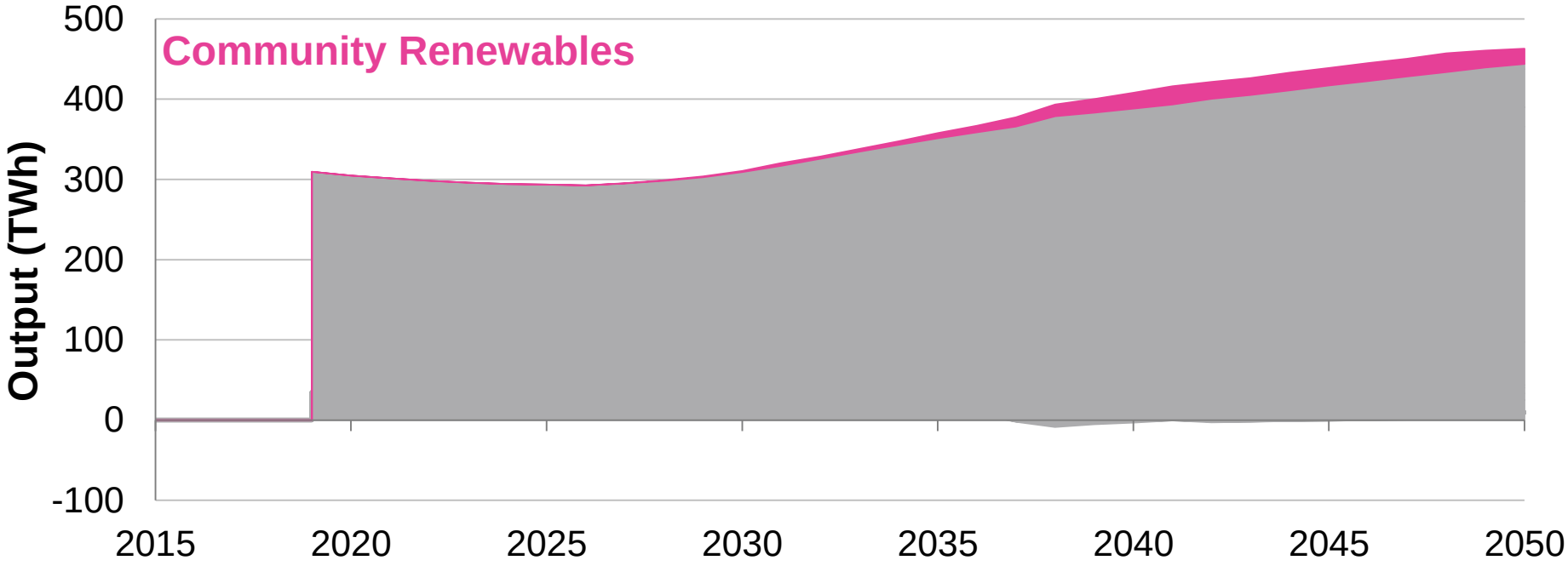

The growth of low carbon capacity will contribute to periods of oversupply of electricity, potentially reaching 20 – 25 TWh (around 6% total output) by 2040.

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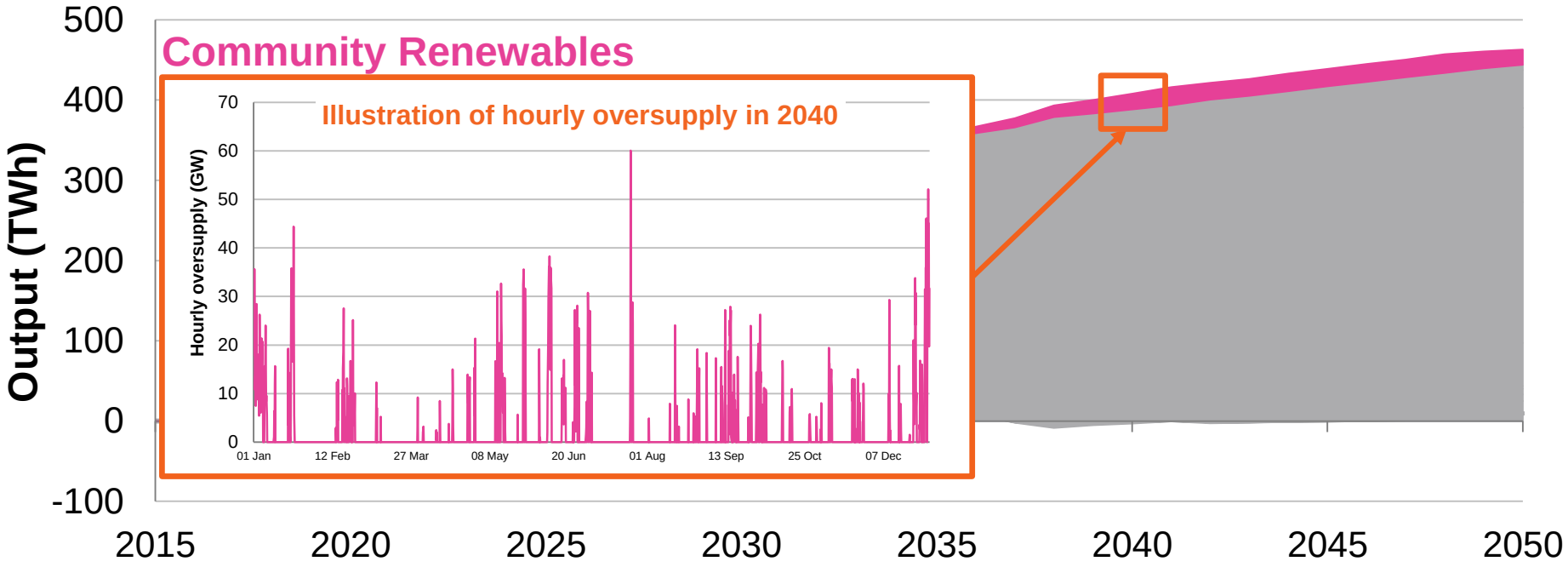

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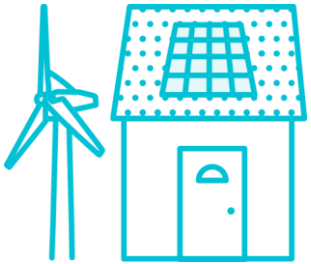
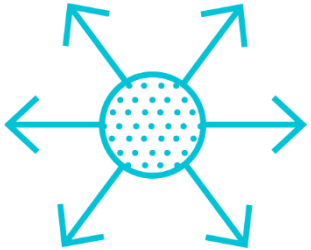
Key takeaways

Higher generation capacity



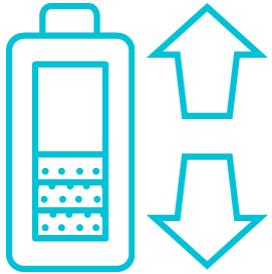
Over 200 GW in both Community Renewables and Two Degrees

Increased decentralisation



Up to 58% of total capacity could be decentralised by 2050

Greater flexibility requirement



Decarbonised scenarios have combined total of over 40 GW of storage and interconnectors

Balancing high renewables

Potentially 20 – 25 TWh of excess electricity after 2040 in Community Renewables