

European Energy Transition Outlook

High-renewables, high-electrification systems

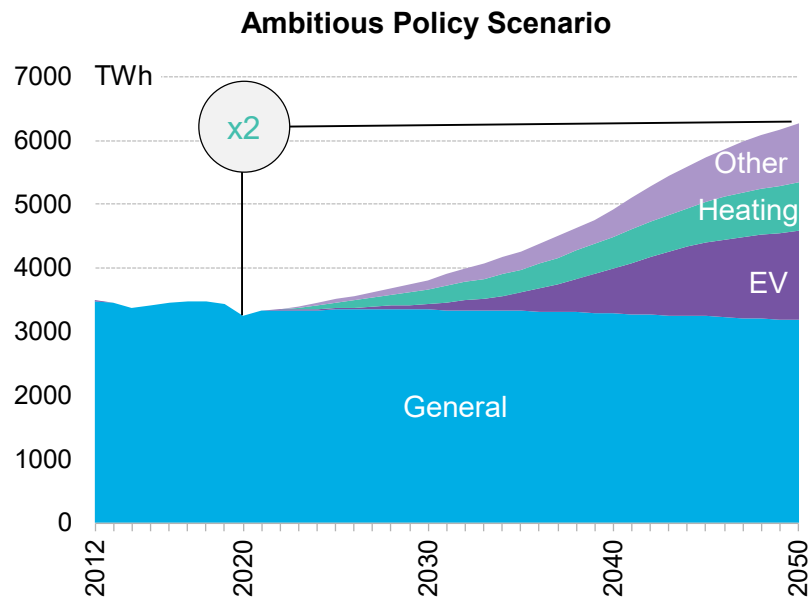
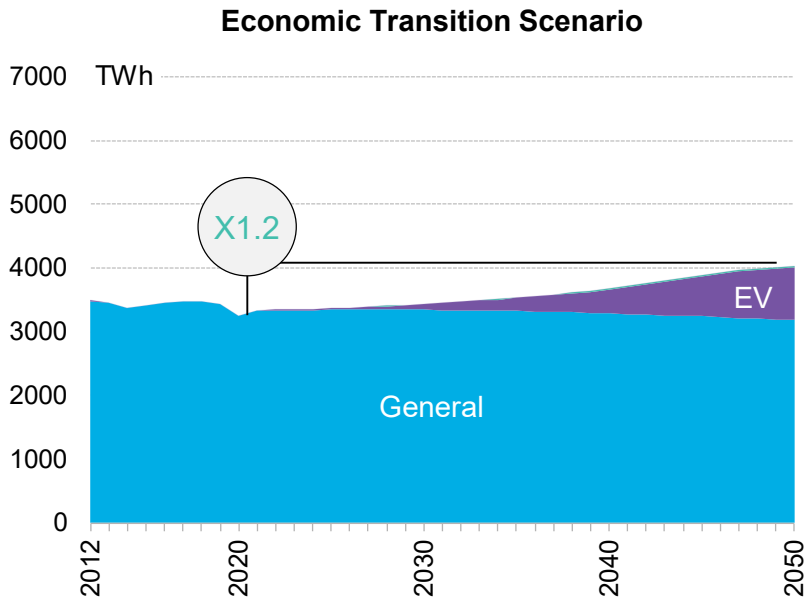
Emma Champion

June 10, 2021



European electricity demand almost doubles by 2050 with electrification and use of green hydrogen

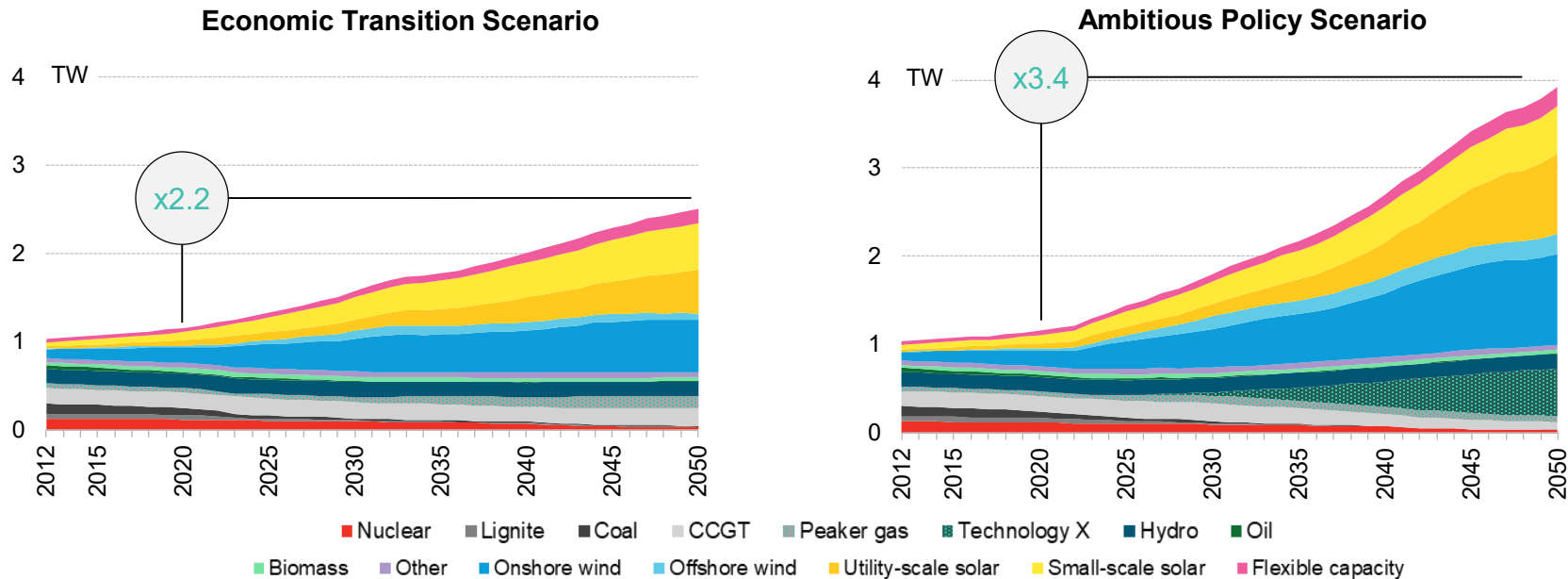
Evolution of European electricity demand



Source: BloombergNEF. Note: Other is mostly industrial electrification.

Europe's electricity generation fleet is three and a half times larger by 2050

Evolution of European electricity generation capacity

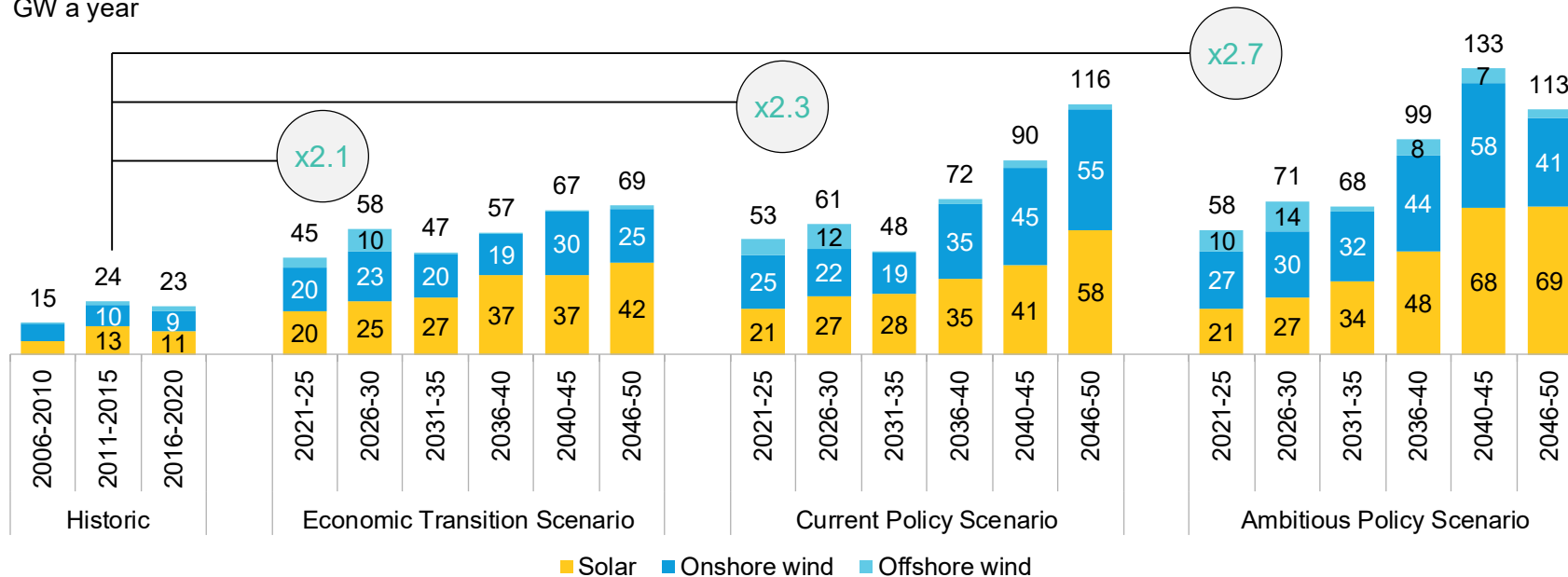


Source: BloombergNEF. Note: 'Technology X' is a placeholder for low-carbon alternatives to gas, that may be provided by hydrogen, interconnectors, nuclear or other technologies.

Annual renewables build in 2020s is at least double its historic highs

Gross annual average capacity additions for solar and wind, Europe

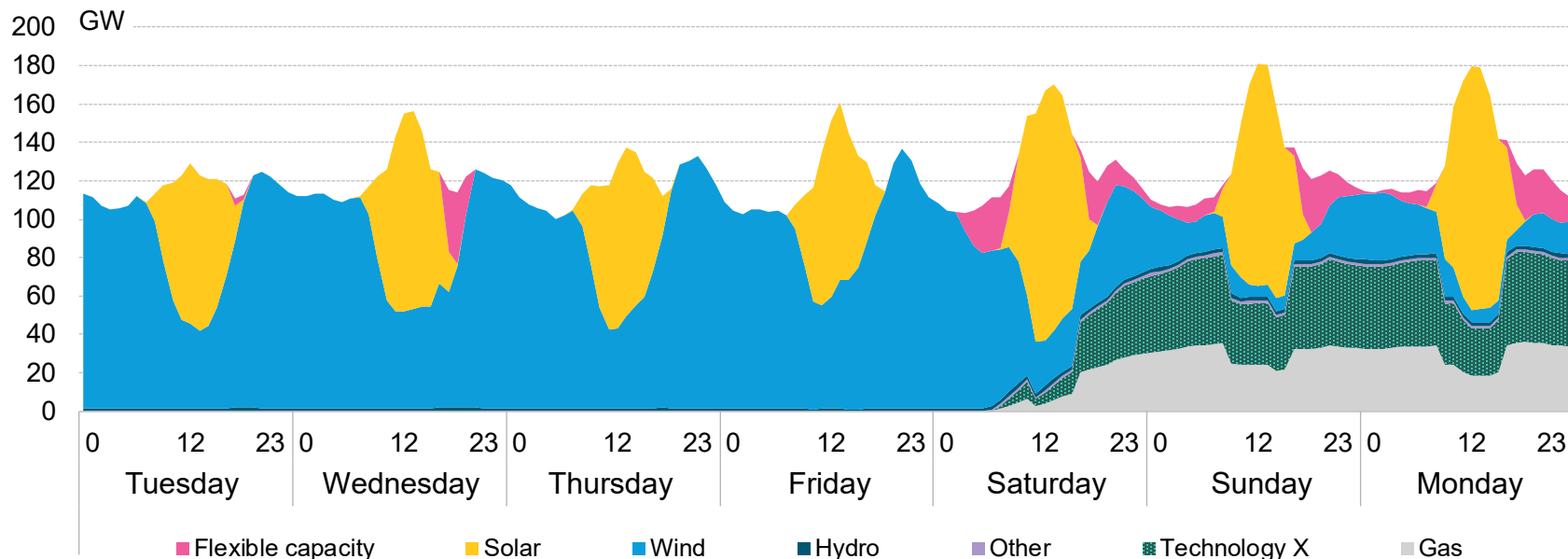
GW a year



Source: BNEF Note: Solar includes utility-scale and small-scale.

A 480GW mix of carbon-free, dispatchable capacity supplies around 9% of European generation by 2050

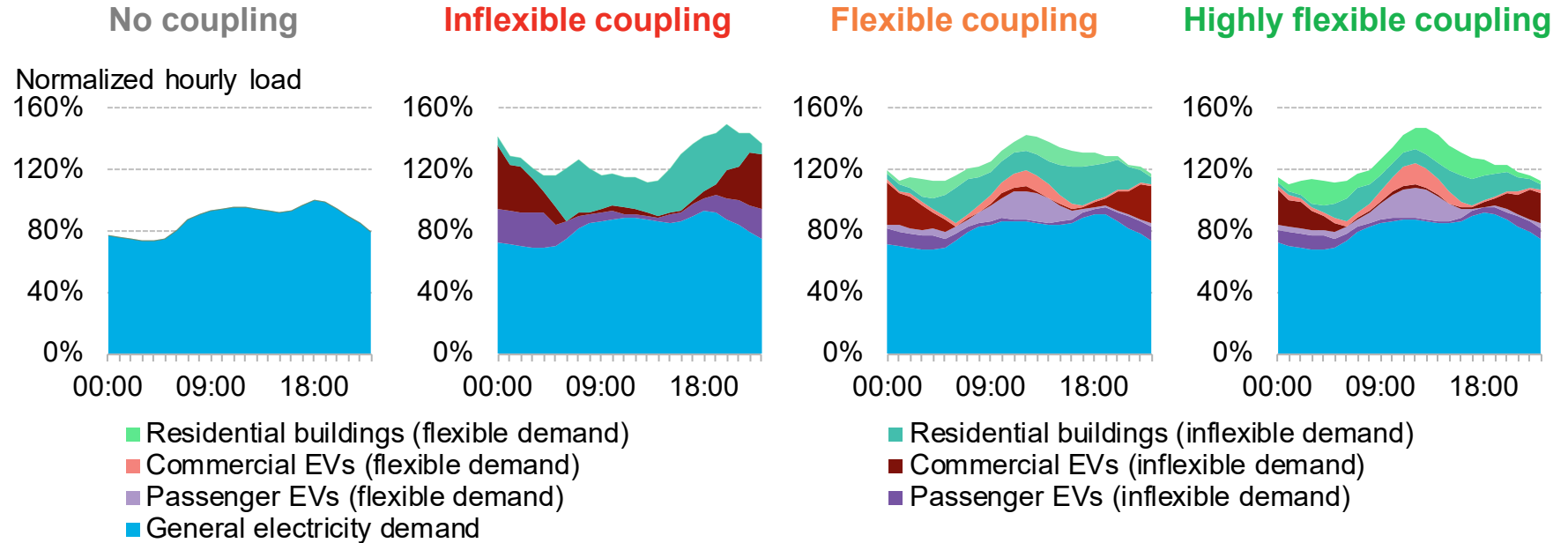
Weekly load profile, Germany, October 2050 (Ambitious Policy Scenario)



Source: European Environment Agency, European Commission BloombergNEF. Note: Baseline for targets is 1990. Historic and expected emissions include the U.K.

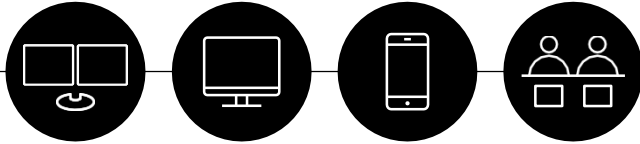
Flexibility needs in a high-electrification system: implications

Demand profiles for a Northern European country (typical winter day in 2050)



Source: BloombergNEF. Note: Charts are normalized to the value of the peak load in the 'no coupling' scenario.

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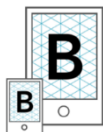
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