

Delivery date: August 17, 2022

## TRANSMISSION 2

### NOT IN MY BACKYARD

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Too many people think about modern HV transmission lines -- with their tall steel towers and long multiple arcs of conductors -- as intolerable eyesores, and some people also fear them as a source of harmful non-ionizing radiation. That is why HV lines have always been -- along with municipal waste dumps, nuclear power plants, chemical factories and multi-lane highways -- the prime examples of NIMBY (not-in-my-back-yard) infrastructures, and why the development of new transmission corridors has always faced not only serious permitting delays but often quite intractable resistance that forced abandonment of original plans, or at least their vastly more expensive transformation from overhead to underground lines (those are at least five and up to ten times more expensive).

For electricity generating companies this has always been inconvenient and costly, but in the new era of renewable generation accounting for ever larger shares of the total power load this has turned into a critical factor that decides the future pace of expansion. As always this is a matter of size. Small

Denmark, already well interconnected with Norway and Sweden and with Germany to the south has become highly dependent on wind (48.6% of all generation in 2021) without any new major interconnections: when winds are calm, northern neighbors supply cheap hydro electricity and Germany can send its renewable or fossil-fueled surplus. But Germany cannot continue its *Energiewende* without additional north-south connectors bringing offshore wind generation from the North Sea to major (and not so windy) load centers in the southern part of the country (Baden-Württemberg, Bavaria).

But Germany has been falling behind in doing this and hence it cannot make use of its wind-generated electricity, leading either to curtailment of production or to negative wholesale prices and threatening to overwhelm the grids in neighboring countries. NIMBY actions have slowed down the planned construction and upgrading of north-south connections while the latest grid plan finds that, besides the previously planned and delayed lines, another HVDC line would be needed by 2035 when renewables should provide 80% of Germany's electricity generation. As for the US, the country is even further behind. According to a 2020 international survey of national or regional grids, the total capacity of interregional links completed since 2014 or schedule to come on-line soon was 260 GW in China, 44 GW in Europe, 18 GW in Brazil, 12 GW in India, 4 GW in Canada -- and only 3 GW in the US! This is yet another indicator of America not measuring up to its super-power status.

German grid problems:

[German electricity grid upgrade 'will be expensive', experts warn – EURACTIV.com](#)

German grid plans:

[Netzentwicklungsplan 2035 \(2021\) | Netzentwicklungsplan](#)

International macrogrid comparisons:

[Macro-Grids-in-the-Mainstream-1.pdf \(cleanenergygrid.org\)](#)

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