# Study on the Need to Evolve German Power Market Design

- Study by Frontier Economics and GE Gas Power evaluates current power market design and associated risks against climate target and energy security objectives
- Findings focus on need of rapid investments in decarbonized gas turbines as backup capacity to complement growing shares of renewables on a path to net zero
- Recommendations include the need to increase transparency and liquidity in the current market design and implementation of remuneration for system adequacy

**Berlin, Germany, 15.11.2022** – Frontier and GE Gas Power today released a study "Achieving generation adequacy within the German power market" in which the risks to ensuring generation adequacy are assessed. The paper evaluates the medium- and long-term needs for controllable thermal backup power plant capacity, analyses the factors that currently hamper investment decisions and provides recommendations for the development of a power market design for system adequacy.

Germany's goal of climate neutrality by 2045 presents significant challenges to the energy system of the future. The accelerated electrification of sectors such as mobility, heat and industry will drastically increase the need for electricity. The increasing demand in combination with a growing share of variable electricity generation puts high pressure on the power system adequacy in Germany, while the current highly uncertain market environment hinders investments in the development of sufficient climate-neutral backup power plant capacities. Germany's plans to phasing out nuclear in April 2023 and coal between 2030 and 2038 require a massive ramp up of dispatchable gas capacities that can run on

hydrogen.

These capacities, however, are necessary for a secure electricity supply in a future climate-neutral electricity system. When coal power plants phase out, clean, thermal power plants will remain indispensable in a decarbonised power system to ensure generation adequacy. The estimates for thermal capacity additions needed by 2030 vary between 14 GW and 42 GW, while only 3.6 GW of gaseous-fuelled power plants projects (planned or under construction) were reported in 2021. Through hydrogen, these capacities may deliver immediate emissions reductions while cementing the trajectory to net-zero emissions.

Getting the capacities into the market on time is a challenge, which can only be ensured within a suitable power market design, the authors underline. To reduce uncertainty and facilitate investments in new generation capacity requires political leadership to provide adjustments and clarity on the market design. Set clear participation rules in the future European and German power market; maintain the marginal cost price, determine the remuneration elements for flexible generation technologies and ancillary services while ensure the availability of infrastructure and fuels is essential.

“The future market design has to provide the price signals to incentivise the investments for flexible and decarbonised capacities in time.  For this, we urgently need a power market design which is fit for purpose and allows market participants to take investment decisions in due course.  Without sufficient new dispatchable capacities, coal power plants will need to run longer, jeopardizing Germany’s decarbonization targets. GE is ready to support the transformation of the German electricity system and with our study we want to contribute to the development of the German power market design.” says Martin O'Neill, Vice President Strategy, GE Gas Power.

“We quickly need new infrastructures for a successful energy turnaround in Germany. This means new renewable energy sources but also new networks for electricity and green gases as well as new clean backup power plants. These plants will be important pillars backing up our energy system in times with low wind and low PV infeed. Batteries, pumped hydro storages, flexible demand and pooling of electric mobility can help bridging hours of low wind/PV infeed – but we also have to prepare for periods of low renewable energy sources availability which can last days or even weeks. Backup power plants are capital intense, long-lasting investments for which a reliable market framework and remuneration rules (beyond the level we have today) are required. Leaner and faster approval procedures, clear certification rules for green fuels as well as plannable access to network infrastructure to procure their fuels are also urgently needed,” says Dr. Christoph Gatzen, Director Frontier Economics.

The current energy crisis has induced a number of debates regarding the future power market design in Europe and Germany. Lean and streamlined regulation required to ensure that the availability of all needed infrastructures in electricity and hydrogen generation, and transmission are synchronised. Approval and permitting procedures must be clear and fast. Furthermore, it should be established as a long-term measure to support adequate investment planning therefore guarantee generation capacity additions.

**About GE Gas Power**

GE Gas Power is a world leader in natural gas power technology, services, and solutions. Through relentless innovation and continuous cooperation with our customers, we are providing more advanced, cleaner and efficient power that people depend on today and building the energy technologies of the future. With the world’s largest installed base of gas turbines and more than 670 million

operating hours across GE’s installed fleet, we offer advanced technology and a level of experience that’s unmatched in the industry to build, operate, and maintain leading gas power plants. For more information, please visit www.ge.com/power/gas and follow GE’s gas power businesses on Twitter and LinkedIn.
GE Gas Power is part of GE Vernova, a dynamic accelerator made up of our Power, Renewable Energy, Digital and Energy Financial Services businesses, focused on supporting our customers' transformation during the global energy transition.

**About Frontier Economics**
Frontier Economics Limited is a specialist economics consultancy that uses economic principles and tools to provide practical solutions to complex problems. Frontier was formed in 1999 and, now with over 350 permanent, fulltime consulting staff (and further associates) in London, Berlin, Brussels, Cologne, Dublin, Madrid and Paris, is one of the largest specialist economic consulting firms in Europe. Together with Frontier Economics Pty located in Melbourne and Sydney (Australia), we work globally for senior decision-makers in business and government.

Frontier works for many of the largest companies and most important policymakers around the world.

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**Media inquiries**


## Hendrik Köstens

FH |
hendrik.koestens@fleishman.com

**Csilla Kövesdi**

GE Gas Power |
csilla.kovesdi@ge.com