Press release

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UTILISATION before LIMITATION: WindNODE flexibility platform begins trial operation

- **Digital procurement platform to reduce the number of wind turbine output in case of grid congestion**
- **Regional producers, consumers and storage facility operators offer system operators flexible use of their installations for system support**
- **Flexibility platform has price decreasing effect on grid fees and helps save CO_2**
- **Close cooperation on platform between transmission and distribution system operators**

Berlin - The growth of renewable energy and the resulting fast increase of the share of fluctuating electricity volumes in the generation mix creates considerable challenges for the players involved in the energy transition. One of these challenges is to operate power grids safely, to make optimum use of their capacity and at the same time to use renewable energy, which is often generated weather-dependently, as much as possible - instead of regulating plants.
In 2017 alone, the output of renewable generating units was reduced by 641 gigawatt-hours in the eastern German states as well as in Berlin and Hamburg; strictly mathematically speaking, enough electricity to supply the city of Berlin for two weeks or cover the demand of Berlin's U-Bahn for about two years. "Utilisation before limitation" is what over 70 partners from all parts of eastern Germany have been working on for two years in the scope of the WindNODE project ("Showcasing smart energy systems from north-eastern Germany"), which is supported by the German Federal Ministry for Economic Affairs and Energy.

A central element of WindNODE is the flexibility platform, which now begins trial operation after almost two years of development. System operators, producers, traders, consumers and storage providers will benefit equally from it. Suppliers, for instance, will be compensated by the system operator for previously unused flexibility in electricity consumption or generation. The electricity customer, on the other hand, profits because the total remuneration received by the supplier will be more generous than the compensation that is currently paid by the system operator to limit the output of RES units. This has a price decreasing effect on the grid fees, to the benefit of the consumer. Moreover, a greater total amount of electricity generated from renewable sources is used, contributing to the reduction of CO_2.

For the participating system operators, 50Hertz, Stromnetz Berlin, Wemag, ENSO NETZ and e.dis, this new platform offers a digital solution to significantly increase the efficiency of grid-stabilising measures (so-called congestion management) in their grids. It furthermore facilitates the necessary and coordinated cooperation between the system operators in the interest of a secure supply of electricity.

WindNODE flexibility platform: important control instrument for system operators

Suppliers of flexible electricity generation or consumption can register on the platform. As soon as they have been prequalified, they can submit offers for the corresponding region, both day-ahead and intraday. The system operators can bid on the most favourable offers that are suitable for their region, if they prepare the 'schedules' (i.e. feed-in and demand planning of electricity producers and users) for their grid area, and the resulting power grid bottlenecks are visualised. Distribution system operators and the transmission system operator coordinate their activities in the process. In this way, it should be possible to manage dynamics in the load distribution of renewable, in particular weather-dependent volatile generation volumes and to optimally integrate them into the system.

An example: again and again, north-south lines in the transmission grid are overloaded when the wind is strong in Mecklenburg-Western Pomerania and Brandenburg. Therefore not all available green electricity can be transported and the output of individual wind turbines has to be limited. The affected wind turbine operators are paid compensations for this measure; ultimately, this cost is borne by all electricity consumers through the grid fees. The objective of the flexibility platform is to influence power consumption at appropriate grid nodes in such a manner that bottlenecks and therefore the limitation of wind turbine output is avoided and as much green electricity is used as possible by connecting or disconnecting flexible loads (e.g. installations used for industrial production processes or cooling installations in warehouses).

Dr Dirk Biermann, Chief Markets and System Operations Officer at 50Hertz, voices the point of view of the transmission system operator: "In its coalition agreement, Germany's federal government has set a very ambitious goal: to increase the share of renewables in energy consumption to 65 per cent by 2030. This will not be possible without further grid development and an even more efficient utilisation of the existing grid. In short: the goal of 65 per cent by 2030 cannot be achieved **without** grid development, but not **only** through grid development either. The introduction of Power-to-X applications and the systematic use of flexibilities must also come into play. This is why the WindNODE platform comes at the right time and can help to make sensible use of 'surplus electricity' generated from renewable sources instead of limiting it. Important in this regard is the close cooperation between transmission and distribution system operators. This, too, is ensured in our region."

The new platform is also an important energy transition milestone for Stromnetz Berlin CEO Thomas Schäfer, representing the distribution system operators: "In our region, there is great potential for renewable generation and flexible loads. In order for their integration into the evolving electricity system to be successful, both technical solutions, such as smart grid technology, and the market-based use of regional flexibility are needed. The flexibility platform implements this and therefore supports us distribution system operators to guarantee the security of supply of our grid customers."

Advantages for many market participants and players

Representatives of Siemens Germany, energy2market and the Schwarz Gruppe explain how the flexibility platform is suitable for very different utilisation strategies and installation types, and how this leads to synergies and advantages for various market participants.

Siemens for instance creates the preconditions for flexible load management in the industrial sector and as such contributes to the establishment of a regional flexibility market. The electricity demand of thermal, mechanical and electrochemical production and production-supporting processes in four Siemens factories in Berlin were analysed in detail to identify flexible loads, which could be forecasted and made available on the flexibility platform. Ten processes with a capacity of about 50 kilowatt

up to approximately 4 megawatts each are currently being considered for flexibilisation. Building on the research, a Mindsphere-based applicationis being developed which calculates a production plan optimised in view of the total cost and is an instrument to help make decisions on the optimal use of flexible loads. The research was conducted at the following Berlin-based Siemens sites: the gas turbine factory, the switchgear factory, the dynamo factory and the meter factory.

Project partner *Energy2market* (e2m) is a marketer of energy and flexibility from distributed generation and consumption installations, which can be bundled into a virtual power station. In the WindNODE project, the aggregator sees the possibility of making even greater economic use of distributed flexibility and thus reducing the practice of limiting RES output. As a potential supplier on the flexibility platform, e2m contributes its experiences as ancillary service provider and participates in the definition of the processes as well as the discussion regarding the adjustment of the regulatory framework conditions. For the supplier, the regional marketing of flexibility is furthermore an interesting addition to its capacity spectrum.

The *Schwarz Gruppe* also takes part in the project through its commercial branches Lidl and Kaufland. Through its branches and logistics centres, the retail company provides storage capacities for renewable energy to provide grid stability on the flexibility platform. Freezers, for instance, can be cooled more efficiently when wind and solar power are available, or forklift and pallet trucks can be charged overnight at adjusted times. With over 3800 Lidl and Kaufmann branches and stores in Germany and about 50 logistics locations, the success of the project can be upscaled quickly.

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About WindNODE:

WindNODE is part of incentive scheme Showcase Intelligent Energy – Digital Agenda for the energy transition (SINTEG) of the Federal Ministry for Economic Affairs and Energy. It encompasses the six eastern German states, including Berlin, and is supported by the heads of state government of the participating states. Within WindNODE, over 70 partners will work together for a period of four years, from 2017 to 2020, to develop transferable model solutions for the smart energy system of the future. WindNODE demonstrates a network of flexible energy consumers who can align their consumption of electricity with the fluctuating offer of wind and solar power stations. The objective is the system integration of large volumes of renewable energy while also keeping the power grids stable. Transmission system operator 50Hertz is the coordinator for WindNODE and one of the seven members of the steering group of the partner project, alongside Berlin Partner for Business and Technology, Energy Saxony, Fraunhofer FOKUS, SIEMENS, Stromnetz Berlin and the Brandenburg Economic Development Corporation (WFBB).

More information can be found at www.windnode.de.

About SINTEG:

With the “Smart Energy Showcase - Digital Agenda for the Energy Transition” (SINTEG) incentive scheme, the Federal Ministry for Economic Affairs and Energy (BMWi) intendsto show what the future of the electricity supply could look like. The idea of SINTEG consists in developing and demonstrating transferable model solutions for a safe, economic and environmentally friendly power supply despite the volatile generation of electricity from renewable energy sources. Adequate solutions from the model regions should be used as an example for a broad implementation in all of Germany and abroad. Partners from the energy industry as well as the information and communication sector cooperate in the five showcase regions. Since 2017, over 300 companies, research institutions, municipalities, districts and federal states work together on the implementation of the energy transition vision of the future.

More information can be found at www.sinteg.de