

## SMART Capital Region

Already today, the annual average of renewable electricity in northeastern Germany is 90 to 100 percent. However, this does not lead to 'full coverage', but rather to days with extreme overproduction or days when absolutely no 'green power' is generated. SMART Capital Region demonstrates how surplus renewable energy from Brandenburg can be used in the capital city and its surrounding areas.

Firstly, a concept for the use of renewable surpluses in Berlin and other urban centers in Brandenburg is being developed. It is based on several network analyses of Brandenburg, which the BTU Cottbus-Senftenberg worked on continuously since 2006 on behalf of the Ministry of Economic Affairs and with the support of network operators. In contrast to previous concepts, this one does not involve regenerative surpluses being transported from Brandenburg to southern Germany but rather in a radial flow to Berlin. In order to understand the regional and temporal distribution of these surpluses, the project will acquire data from the network control centers of 50 Hertz Transmission GmbH, MitNetz-Strom GmbH, E.DIS AG and Stromnetz Berlin GmbH. In this way real situations can be represented and the questions of 'how', 'where' and 'when' surpluses occur, and which controllable electrical loads could be supplied, can be answered. Based on this 'current situation' the load/generation ratio is calculated as it might occur in Berlin-Brandenburg in the future.

In the showcase part, network-integration of renewable energy and the use of electric-powered vehicles will be tested on campus in a SMART grid with a maximum capacity of 2 MW. Therefore, various power producers, consumers and energy storage providers are being linked up. Through their IT linkage and management, the future of energy supply, a so called 'Smart Grid' is established and can be researched and experienced at the central campus of the university in Cottbus. The interaction of individual components and technologies in model systems is studied and optimized. Consumption and production of electrical energy are thus aligned and covered by renewable production to the greatest degree possible. To add to this, controllable loads are made available through smart meters as well as through Power to Gas and Power to Heat facilities, and through electric or heat storage facilities – all set up on campus. Controlled vehicle loading (the use of electric cars as 'rolling energy storages') is possible due to an earlier successful research project called 'e-SolCar', and is included in the concept as well.

Backdrop: In April 2012, the German Government selected four regions in the country to act as 'Showcase Regions for Electric Mobility'. Based on a decision by the German Bundestag, research and development into alternative drive systems is to take place across each of these regions. The Federal Government provides a total of €180 million in funding for these large scale demonstration and pilot projects. The aim is to test electric mobility within the overlapping systems of energy, vehicle, and transport. One of the regions called 'Berlin-Brandenburg International Showcase for Electromobility' is coordinated by the Berlin Agency for Electromobility (eMO). SMART Capital Region is one of the 30 chore projects of the Berlin-Brandenburg showcase. It is funded by the Brandenburg Ministry for Economic Affairs and Energy (MWE) with € 1.8 million.