



Market Signals as Adequacy Indicators for Future Flexible Power Systems

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Full paper:

Summary

In a future market, flexible resources, storage, and demand response will be indispensable to ensure that the supply can be covered at all times. Flexibility will change the dynamics of the electricity market. At times of abundant renewable energy and low electricity prices, storage and flexible demand will increase their consumption. The opposite will occur at times of scarcity, thus avoiding shortages but leading to remarkably high prices.

Current reliability standards are based on the duration during which load is shed. However, in a future electricity market with more demand elasticity, scarcity might not lead to loss of load but instead to prolonged periods of high prices.

A scarcity situation that leads to high and prolonged electricity prices could cause windfall profits to generation companies. This situation could continue for a long time if companies are not able to add new capacity quickly. Extreme price volatility and excessive cost recovery could be early indicators of stress in the system. In this opinion paper, we propose that future adequacy assessment indicators should be supplemented with market signals.



Info

The TradeRES project will develop and test innovative electricity market designs that can meet society's needs of a (near) 100% renewable power system. The market design will be tested in a sophisticated simulation environment in which real-world characteristics such as actors' limited foresight into the future and risk aversion are included.



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