

Flexibility evaluation of integrating solar power into the Nigerian electricity grid

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What is it about?

The roles of thermal power plants flexibility in terms of changes in generation pattern, reserve requirement, number of start-ups, idle hours, generated energy, operational revenue, greenhouse gas emissions reduction were explored in this research. This will assist in the planning for solar energy integration to satisfy electricity demand with acceptable security through flexibility service provided by conventional generation in Nigeria. As flexibility adequacy is a requirement at the planning stage in determining the optimal investment for additional flexible generating units to accommodate high solar energy penetration, it therefore answers the question: can the thermal power plants in the system operate flexibly to backup solar power integration?

Why is it important?

This study provides policymakers, system operator and power generation investor with an understanding of the flexibility services required from thermal power plants for sustainable grid connected solar power in Nigeria.

Perspectives



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As grid connected solar power generation has been considered, empirical evidence on the thermal power plants flexibility requirement for integrating variable renewable energy source is needed to inform policy makers, system operator and utilities on the potential opportunities and challenges of this option. An understanding of these requirements and their impacts can tip the balance towards a sustainable low carbon electricity mix.

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