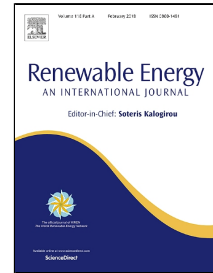


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Optimum Penetration of Regional Utility-Scale Renewable Energy Systems

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- A renewable energy optimization matrix identifies the hourly electrical load provided by solar or wind energy.
- The optimum amount of combined regional solar and wind capacity for a specified curtailment is determined.
- A utilization rate is specified and then renewable system is optimized based upon the amount of electric load required.
- A specific portion of electric load to be met by a combined wind and solar system is specified, and then renewable system is optimized to meet the lowest levels of curtailment.
- Suggested optimum levels have been calculated under curtailment criteria while other factors are not considered in this study including energy storage, demand side management, power quality, and energy market price.

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