

## Variable Generation, Flexible Demand



Edited by  
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# Variable Generation, Flexible Demand

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## DESCRIPTION

Traditionally the grid operators predicted demand and dispatched generation to meet it. As we move forward to a future where renewable generation accounts for the bulk of supply on the network, this paradigm is changing to one where the grid operators have to predict variable renewable generation and adjust demand to match it. This is likely to happen in more places as the percentage of renewable generation, especially solar and wind, is challenging the ability of the grid operators to keep supply and demand in balance in real time. This book examines the ways and means of developing flexible demand, which has remained largely unexplored, to play an increasing role.

## KEY FEATURES

- Examines the challenges of keeping supply and demand in balance in systems with growing percentage of variable renewable generation;
- Explores the inherent flexibility of demand for many types of customer loads and how they can be aggregated into blocks and participate in wholesale markets
- Describes promising developments including business models to engage and empower customers to offer their flexible demand
- Examines the remaining obstacles including regulatory, pricing, incentives, technical, and behavioral before flexible demand can become a major contributor to balancing supply and demand in real time.

"Flexible demand is one of the largest, most important, and most challenging resources in the power system of the future"

**Peter Fox-Penner,**

Director, Boston University Institute for Sustainable Energy  
And Chief Strategy Officer, Energy Impact Partners

"The flow of investment in energy markets is now dominated by variable renewable energy, which presents new integration challenges. Flexible demand offers an important counter-balancing opportunity."

**Paul Simshauser, AM**

Griffith University and  
CEO, PowerLink, QLD, Australia

"As the electricity mix becomes increasingly dominated by variable renewable generation, flexible demand has to assume a more prominent role in balancing supply and demand."

**Jean-Michel Glachant**

Director, Florence School of Regulation, Florence, Italy

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Edited by **Fereidoon Sioshansi**, Menlo Energy Economics, San Francisco, CA USA

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