



Self-Forecasting Energy Load Stakeholders for Smart Grids (Paperback)

By MR Dejan ILIC

Createspace, United States, 2014. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book ***** Print on Demand *****. The unpredictability of energy loads is responsible for a significant portion of efficiency loss in power grids. Today, we are not only facing uncertainties in consumer loads, but increasing adoption of renewable energy production is also affecting producers. In order to reduce load uncertainties, emerging Smart Grid business models call for the active participation of traditionally passive stakeholders, such as office buildings or even residential consumers. These models include, for instance, active involvement in grid operations, participation in local energy markets, demand response programs, etc. Still, many of these require stakeholders to make accurate load forecasts, which is hard to achieve on small scales. To overcome this obstacle, this work introduces the concept of variable energy storage where assets of stakeholders, such as electric vehicles, are used to improve accuracy by absorbing errors of their self-forecasts. Since accuracy as such is achieved internally, by reporting the selfforecast to external parties a deterministic energy signature is achieved. The challenges of this dissertation are to (1) enable an efficient communication in between stakeholders, (2) reach sufficient forecast accuracy of an...



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