# Time-of-use tariff design under uncertainty in price-elasticities of electricity demand: a stochastic optimization approach

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**Abstract— Time-of-use (ToU) electricity tariffs are currently employed or considered for implementation in many jurisdictions around the world. In ToU modalities, a set of different tariffs for different hours of the day and/or seasons of the year is defined at the beginning of a given horizon, and then kept constant until its end. While designing ToU tariffs, one of the most significant sources of uncertainty to be considered relates to price-elasticities of demand. We propose an approach for ToU tariff design based in quadratically constrained quadratic programming and stochastic optimization techniques, addressing these uncertainties and dealing with various aspects of tariff design from the point of view of the regulator/regulated utility.**

**Index Terms— Demand response, electricity tariff design, quadratically constrained quadratic programming, stochastic optimization, time-of-use tariffs.**

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