

**INTEGRAL RESOURCE OPTIMIZATION NETWORKS AND THEIR
TECHNO-ECONOMIC CONSTRAINTS**

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ABSTRACT

The currently observed lurking trends in possible shortages of primary energy (e.g. crude oil) as well as the high demand result to a steeply increase in electricity wholesale prices. Therefore, beside efficiency measures and the Kyoto target also Load-Management-Programs have to be of high interest for an economy. Such programs do not necessarily increase the energy efficiency, but they are able to stabilize electricity prices and reduce negative effects on the economy due to stable electricity prices. This paper describes the economic benefits derived from *Integral Resource Optimization Networks* (IRONs - an IT-infrastructure creating new opportunities for Load-Management and Distributed Generation). A simple economic model is presented which is able to describe the interactions between consumers and energy suppliers. Furthermore, policy conclusions for well working IRONs are derived. One of the major conclusion derived from investigations in this paper is: For a sustainable electricity system without unusual high price spikes a consideration of the (short term) demand curve is compulsory. It is necessary to introduce a technical infrastructure (e.g. IRONs) which gives consumers easily the possibility to react to price spikes in the short term without loss of comfort. Therefore, the second part of this paper describes the technical aspects of such *Integral Resource Optimization Networks* and possible concepts for their realisation.