



## MODELING OF ZONAL PRICES WITH APPLICATION IN STRATEGIES AND LONG-TERM DEVELOPMENT PLANNING

**A. Obusevs, I. Oleinikova**

*Institute of Physical Energetic*

*Laboratory of Power System Mathematical Modelling*

*Aizkraukles 21, LV-1006 Riga – Latvia*

*Ph.: +37122120106*

*Email: [A.Obusev@gmail.com](mailto:A.Obusev@gmail.com)*

### ABSTRACT

Increasing integration in the Baltic electricity market and Europe-wide interconnection establishment makes it necessary to consider markets principals for power system development planning.

In this paper is given a method for modelling of zonal prices with application in strategies and long-term development planning. Proposed method of zonal prices is based on Lagrange multipliers for finding maxima of Social Welfare subject to power system constraints. The main parts of this task are improving existing method for criterion calculations in development tasks with market conditions and analyze method advantages and disadvantages. The results of this research can also be useful for developing sustainable development management technologies for large technical systems.

The paper describes the course of the research from description of the problem to algorithm development and value calculation. This research reflects one of the many problems, which need to be solved in imminent future and then utilized for power transmission network modeling and development tasks, for example, increasing integration in the Baltic electricity and Europe-wide interconnection establishment.