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Models and methods for optimizing the structure and operating modes of main electric networks: monograph / V.V. Kuchansky, V.V. Cherkashina. – Odesa: Publishing house "Helvetica", 2026. – 146 p. ISBN 978-617-554-755-7

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The monograph has developed and substantiated a set of models and methods for optimizing the structure and operating modes of main electric networks by structuring overhead lines and using controlled compensation tools, which allows on a single basis to

compare and justify options for lines of different voltage classes in order to minimize discounted costs and select optimal technical parameters of electric network objects. The results of the research presented in the monograph can be used in the development of schemes and programs for the development of a unified power system; feasibility study of investment projects; updating the regulatory and methodological framework for the design and operation of main power grids; planning the development and reconstruction of main power grids in Ukraine.