A New Pricing Model for Supra-Regional District Heating Networks

J. Steinegger*[1], T. Kienberger[2]

[1]University of Leoben, Austria; [2]Montanuniversität Leoben, Chair of Energy Network Technology, Austria (*josef.steinegger@unileoben.ac.at)

Abstract

While research primarily focuses on the pricing model for heat in local district heating networks, where it is mainly assumed that the heat provider has a monopoly, the investigation of supra-regional district heating networks opens a new field for research. These networks enable the connection of multiple different heat providers and consumers, offering the perfect framework for a deregulated market. The aim of the presented work is to introduce a new pricing model for supra-regional district heating networks. This model considers all possible heat generation units, fostering competition in the market. It aims to provide incentives for heat providers to improve their heat generation units. In addition, the heat price should be more foreseeable, allowing heat providers to calculate their future profits more accurately and providing greater transparency for consumers. Therefore, a merit order system is presented based on the levelized costs of heat. Considering that bid prices in merit order systems often do not exactly match the cost types the merit order is based on, additional rules are integrated into the system. Like a lower bid price limit for each different heat generation unit type, to ensure that no unfair market conditions arise due to distorted offer prices. This pricing model enables low heat prices when there is a low demand for heat and ensures fair compensation for more expensive peak load plants during periods of high heat demand. The new infrastructure facilitating a supra-regional district heat network allows for higher capacity utilization, balancing out the lower heat prices during periods of reduced heat consumption. This paper examines the workings and effects of the proposed price model in detail. It concludes by highlighting the limitations and special features of the model.